MACWORLD

January 1987 $3.95
Canada $4.95

The Macintosh™ Magazine

Giant Steps for Desktop Publishing!

- *Superb Big Screens*
- *Drawing with PostScript*
- *6 Ways to Paint*

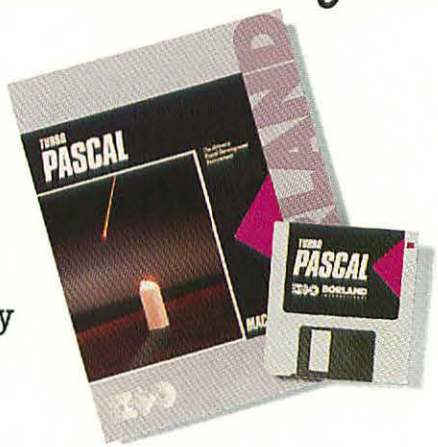


NEW!

Turbo Pascal for the Mac: incredibly fast and fully integrated!

Borland's new Turbo Pascal for the Mac™ is so incredibly fast that it can compile 1,420 lines of source code in the 7.1 seconds it took you to read this sentence.

And reading the rest of this page takes about 5 minutes, which is plenty of time for Turbo Pascal for the Mac to compile at least 60,000 lines of source code!



Turbo Pascal for the Mac does both Windows and "Units"

The *separate* compilation of routines offered by Turbo Pascal for the Mac creates modules called "Units"—which can be linked to any Turbo Pascal® program. This "modular pathway" gives you "pieces" which can then be integrated into larger programs. (You build the "pieces" once, and you know they work, so you can use them again without having to recompile.) The immediate benefits of this technique are a more efficient use of memory and a reduction in the time it takes to develop large programs. (What you need to run Turbo Pascal for the Mac is 256K minimum—or half a Fat Mac, 1 drive, and the ability to handle astonishing speed.)

> "The timing of Turbo Pascal for the Mac couldn't be better. The recent success of the Macintosh in business and its continuing momentum in higher education coincide well with the introduction of Turbo Pascal for the Mac. Turbo Pascal is already an industry standard in the IBM-compatible world, and we're very excited to see Borland International's new commitment to provide this and other modestly priced, high-quality software for the Macintosh computer.
>
> **John Sculley, Chairman, Apple Computer, Inc.**

> "Turbo Pascal has become the language of choice at major educational institutions around the country, and more than 500,000 copies of the IBM PC version have been sold. We believe that Turbo Pascal for the Mac is the ideal educational and professional programming tool for the Macintosh.
>
> **Philippe Kahn, President, Borland International**

Turbo Pascal for the Mac is so compatible with Lisa® that they should be living together

Routines from Lisa Pascal,™ Macintosh Programmer's Workshop Pascal, and Inside Macintosh can be compiled and run with only the subtlest changes. Turbo Pascal for the Mac is also compatible with the Hierarchical File System of the Macintosh.™ (You can define default volume and folder names for the names used in compiler directives.) Compatibility is also familiarity, and you'll feel right at home with Turbo Pascal for the Mac because it fits neatly into every aspect of the Macintosh environment. The pull-down menus are there, along with dialog boxes to guide you in making choices and picking options.

Turbo Pascal for the Mac cranks out more than 12,000 lines a minute

Better than *12,000 lines per minute* of compiled source code race out of Turbo Pascal for the Mac. There is definitely "No Waiting." And none of the "stop/start" compiling delays that afflict some of the software programs that we're not mentioning here. (They can take 10 minutes to do what Turbo Pascal for the Mac can do in 10 seconds!)

You don't spend a lot of up-front time learning to use Turbo Pascal for the Mac. It's as *easy* as it is *fast*—which is not to say that it's over-simplified or written for people who have recently learned to walk erect. Instead, it's electronic proof that sophistication and complication don't need to go hand-in-hand.

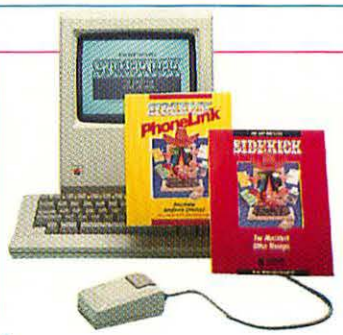
In all software, there's the Hard Way, the Wrong Way, the Weird Way, the No Way, and the Borland Way. Welcome to the Borland Way!

How to walk and chew gum!

Turbo Pascal for the Mac lets you do up to *8 different things at once.* You can have up to 8 separate programs in memory, work on one, move on; work on another, move back —or duck and weave between all 8 at the same time! And you can do these 8 Easy Pieces *while you run* the compiler. Multiple editing windows allow you to edit, compile, and execute each window individually. With several windows open at the same time, you switch from one open window to another faster than a cat burglar—and never get caught. It's "take the source code and run!"

The 27-Second Guide to Turbo Pascal for the Mac

- Compilation speed of more than 12,000 lines per minute
- "Unit" structure lets you create programs in modular form
- Multiple editing windows—up to 8 at once
- Compilation options include compiling to disk or memory, or compile and run
- No need to switch between programs to compile or run a program
- Streamlined development and debugging
- Compatibility with Lisa Pascal and Macintosh Programmer's Workshop Pascal (with minimal changes)
- Compatibility with Hierarchical File System of your Mac
- Ability to define default volume and folder names used in compiler directives
- Search and change features in the editor speed up and simplify alteration of routines
- Ability to use all available Macintosh memory without limit
- "Units" included to call all the routines provided by Macintosh Toolbox



Clear your desk, SideKick's here!

SideKick® brings true desktop management and communications to your Mac. Now you can automatically dial phone numbers, log on to bulletin boards, schedule appointments, jot down notes, calculate business expenses—and more—while running all your other Mac software. Once you get SideKick you'll wonder how you ever did without it!

See order form on right-hand page ▶

Introducing Reflex for the Mac, NEW! Borland's remarkable new relational database

Because it is a truly relational database, Reflex for the Mac™ lets you get your various acts together. Lets you connect "A" to "B" to "C," or "Dog" to "Cat" to "Fight." Or whatever links and connections you need to make and need to see. It's a simple spreadsheet-style series of electronic and visual cross-references. There's a clear connection (which you first make by drawing it on-screen) between "Client"—"Matter"—"Attorney"—"Time Sheet"—"Expenses" and "Bill." Or between "Slow Driver in Left-Hand Lane"—"Mile-long Traffic Jam" and "Shot from Behind." It's all relational.

Designed to make the most of your Mac's visual talents, Reflex for the Mac lets you place fields and pictures wherever you want them on the page—and print them that way with your Report Generator.

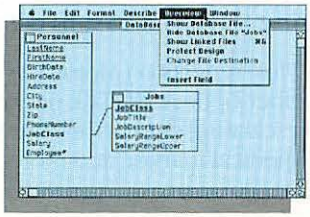
A funny way to use Reflex for the Mac

Let's say you have to make a lot of speeches and you like to tell jokes, but can't always remember the right one for the right audience at the right time. So you use Reflex for the Mac to set up multiple files that all connect to each other.

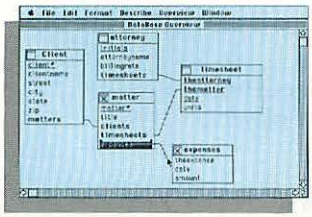
Your "Joke" file connects to your "Audience" file, which is split into categories like "Friendly," "Hostile," "Dumb," "Student" or whatever—all of which are interconnected and relational. Reflex for the Mac lets you find the right joke for the right audience, right now.

(The serious sides of business include applications like client billing, stock portfolio management, tax planning, and your checkbook.)

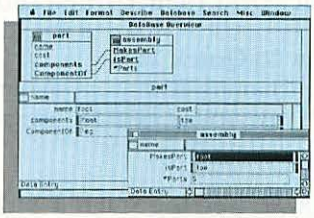
> "Really uses the visual strength of the Mac to produce a database design tool
> *Adam Greene, InfoWorld*
>
> . . . a stunningly wonderful application generator/dbms
> *Esther Dyson, Release 1.0*
>
> Bridges the gap between the pretty programs and the power programs
> *Stewart Alsop, PC Letter*"



After opening the "Overview" window, you draw link lines between databases directly onto your Macintosh screen.



The link lines you draw establish both visual and electronic relationships between your databases.



You can have multiple windows open simultaneously to view all members of a linked set—which are interactive and truly relational.

Mac News for Kangaroos!

Heart of America, one of the U.S. 12-meter contestants in the America's Cup races in Australia, is relying on Reflex for the Mac to help *Bring The Cup Up*. (They're also using Borland's SideKick and Turbo Pascal.) Reflex analyzes 20 different variables like *wind speed, heel angle, backstay load, trim tab angle, rudder angle* and 15 other criteria to show and tell *Heart of America* where to be when—and what to do now to win!



Heart of America's skipper Buddy Melges with Borland International's skipper Philippe Kahn on a testing, training, and analytical run, Santa Cruz, California.

You need Reflex for the Mac

Get some Reflex action out of your Mac. Call now. With Reflex for the Mac, you'll have all the right connections—for only $99.95!

YES! I want the best!

Send me Turbo Pascal for the Mac, Reflex for the Mac, or SideKick for Mac at:

$99.95

To order by phone or for a dealer nearest you,

call (800) 255-8008

in CA call (800) 742-1133

__ *Turbo Pascal for the Mac*	$99.95	$ _____
__ *Reflex for the Mac*	*99.95	$ _____
__ *SideKick for the Mac (with PhoneLink)*	99.95	$ _____
Outside USA add $10 per copy CA and MA res. add sales tax		$ _____
Amount enclosed		$ _____

Prices include shipping to all US cities.

Payment: VISA MC Money order Check

Credit card expiration date ___/___

Card # _____

Name: _____

Shipping Address: _____

_____

City: _____

State: _____ *Zip:* _____

Telephone: _____

CODs and purchase orders WILL NOT be accepted by Borland. Outside USA make payment by bank draft, payable in US dollars drawn on a US bank.

All prices are suggested list prices and are subject to change without notice.

**Introductory price—good until 1/15/87.*

NOT COPY PROTECTED

60-DAY MONEY-BACK GUARANTEE

If within 60 days of purchase you find that this product does not perform in accordance with our claims, call our customer service department and we will gladly arrange a refund.

Minimum system requirements:
Turbo Pascal for the Mac: 256K. Reflex for the Mac: 512K. SideKick for the Mac: 128K.

M52

BORLAND INTERNATIONAL

Vive la différence

4585 SCOTTS VALLEY DRIVE
SCOTTS VALLEY, CA 95066
(408) 438-8400 TELEX: 172373

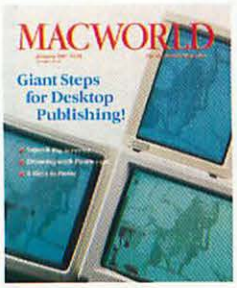


Borland products include Turbo Prolog; Turbo Pascal; Turbo Pascal for the Mac; Turbo Tutor; Turbo Editor Toolbox; Turbo Database Toolbox; Turbo Graphix Toolbox; Turbo GameWorks; Turbo Lightning; Lightning Word Wizard; Reflex: The Analyst; Reflex for the Mac; Reflex Workshop; SideKick; SideKick for The Mac; Traveling SideKick; and SuperKey—all of which are trademarks or registered trademarks of Borland International, Inc. or Borland/Analytica, Inc. Traveling SideKick is not in any way associated with Traveling Software, Inc. of Seattle, Washington.
Macintosh is a trademark of McIntosh Laboratories, Inc. and is used with its express permission. Lisa is a registered trademark of Apple Computer, Inc.
Inside Macintosh is a copyright of Apple Computer, Inc. Lisa Pascal is a trademark of Aloi Seiki Kabushiki. Copyright 1986 Borland International BI-1081A

MACWORLD

January 1987

The Macintosh™ Magazine



On the Cover

The image on these large-screen monitors was created with Adobe's new PostScript graphics program, Illustrator. *See* Macworld News *for a report on the software, and p. 88 to find out if bigger really is better.*

Departments

13 Mac Bulletin
Late-breaking news.

17 David Bunnell

35 Letters

47 Commentary/Jerry Borrell

50 Contributors Notes

55 Steven Levy

141 Macworld 1986 Annual Index

165 How To/**Quick Tips**
Hunting down version numbers, HFS fine points, help for text-game players, and more.

175 How To/**Getting Started with Mac Acronyms**
RAM, ROM, SCSI, CPU, and other basic Mac terms decoded.

185 How To/**Insights on the LaserWriter**
Make your printer perform.

197 How To/**Mac Desktop Tools**
The facts on faster Finders.

205 How To/**Mac Finance Tools**
Taking stock of portfolio managers and market forecasters.

212 Updates
Details about recent software upgrades.

223 Where to Buy
How to find products featured in this issue.

236 Best-Sellers

73 Macworld News

▪ *The Illustrator's Magic Wand* Adobe introduces a PostScript drawing tool.

▪ *HookUp!* A preview of icon-based programming.

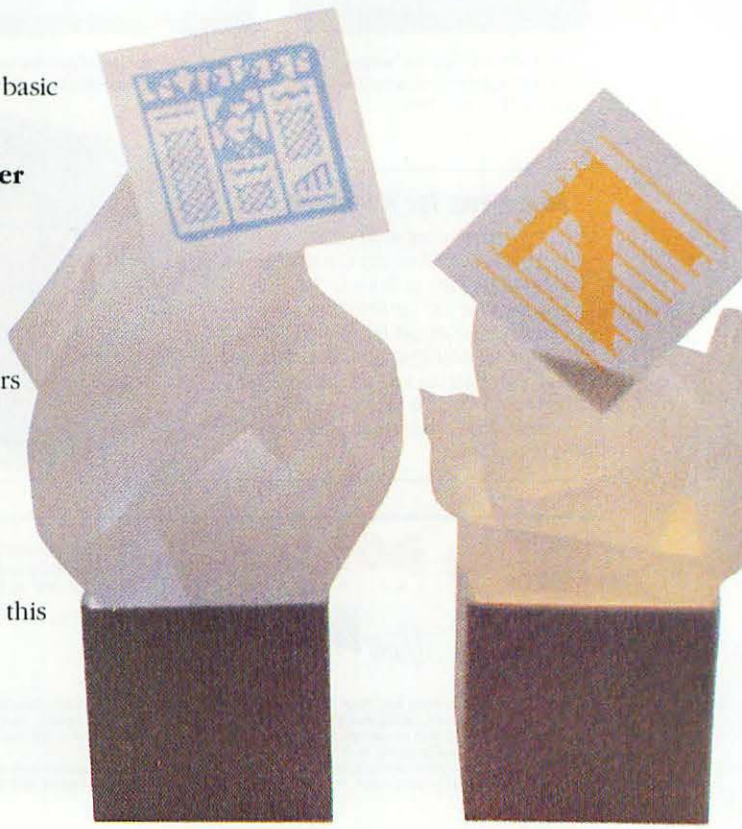
▪ *The Chinese Macintosh* New software combines calligraphy with word processing.

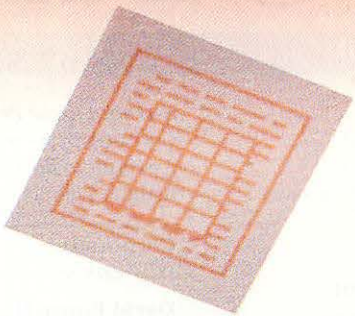
▪ *Is It Art or Is It Memorex?* Famous programmers tell all.

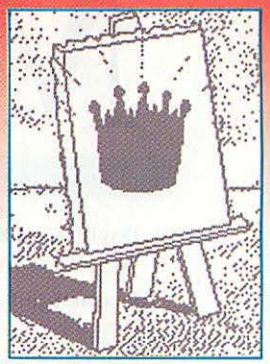
▪ *Armchair Quarterbacks* Coach the great Super Bowl teams of the past.

Plus, reports on Motorola's 68030, a fiber optic AppleTalk network, escalating chip prices, the Mac in the medical market, and more.









page 96

Features

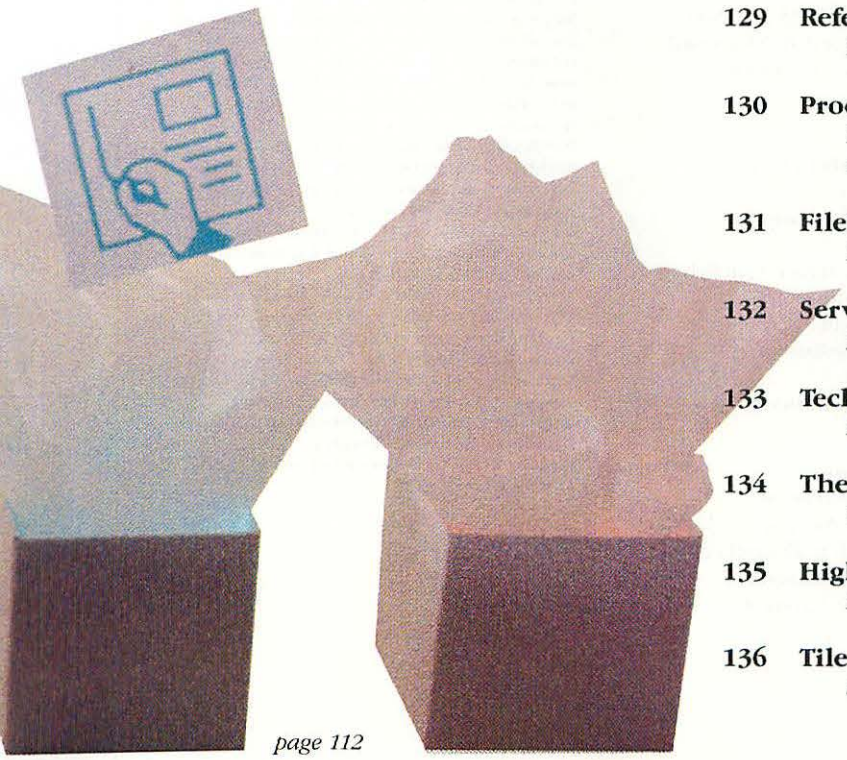
88 **Up on the Big Screen**
Sizing up three large-screen Mac monitors.

96 **MacPaint's Successors**
Five new paint programs challenge the old master of Mac graphics software.

102 **Shopping for SCSI Storage**
Tips on how to spot winners in the crowded SCSI market, plus feature comparisons for over 100 drives.

112 **New on the Desktop**
A look at the new generation of more powerful desktop publishing tools.

118 **Building a Multiuser Application**
Construct and install a multiuser general ledger with *Omnis 3 Plus*.



page 112

Reviews

122 **The New Write**
WriteNow word processing.

124 **Making Money with Your Mac**
Market Pro market analysis.

125 **3-D Dreams**
Phoenix 3D modeling.

126 **A CAD System for Systems**
Anatool structured systems analysis.

127 **Quality Accounting Software**
AMS General Ledger and *CheckMark Payroll*.

128 **Front-End Typesetting for the Mac**
Textures document design.

129 **Armchair Conquistador**
Strategic Conquest adventure game.

129 **References: Supplied upon Request**
PBS bibliography system.

130 **Process Monitoring**
Parameter Manager measurement and analysis system.

131 **FileMaker's Form Improves**
FileMaker Plus database manager.

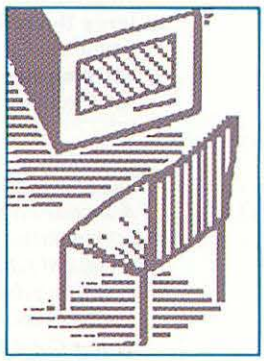
132 **Serving the Masses**
3Server3 network disk server.

133 **Technical Writing Anyone?**
MacEqn equation desk accessory.

134 **The Test of Time**
measureUP test-generating tool.

135 **Highfalutin Hyphenation**
Mac-Hy-phen desk accessory.

136 **Tile Away the Hours**
Shanghai strategy game.



page 118

MACWORLD

David Bunnell
Editor-in-Chief

Jacqueline Poitier
Director/Art and Design

J. Kelley Younger
Editorial Director

Karen Wickre
Editorial Administrator

Jerry Borrell
Editor

Christopher Burg
Art Director

Editorial
Managing Editor: Charles Barrett
Associate Editors: Daniel Farber, Adrian Mello
Technical Editor: David Ushijima
Assistant Editors: Nancy E. Dunn, Janet McCandless, Joe Matazzoni
Senior Copy Editor: Peggy Nauts
Copy Editors: Cathy E. Abes, Katherine Ulrich
Editorial Assistants: Eileen Drapiza, Valerie L. Kuletz
Editorial Administrative Assistant: Otto Waldorf
Assistant to the Editorial Director: Daniel C. Berkowitz
Contributing Editors: Danny Goodman, Jim Heid, Steven Levy, Gordon McComb, Erfert Nielson, Lon Poole

Art and Design
Designer: Susan Howard
Associate Art Director: Joanne Hoffman
Design Associates: Leslie Barton, Victoria Floyd

Production
Director: Herbert Linden
Senior Production Managers: Frances Mann, Lee R. Trevino
Editorial Production Manager: Ellyn L. Hament
Production Editor: Susan M. Ford
Ad Traffic: Jayne Boyer
Lead Typesetter: Mark L. Duran
Typesetter: Virginia Weir
Display Advertising Supervisor: Georgia George
Assistant: Rosanne Reynoso

Research
Director: Cheryl Woodard
Manager: Gary L. Rocchio
Research Analyst: Ralph Ames
Administrative Assistant: Steven F. York

Corporate Development
Publicist: Shirley Gines
Special Projects: Jeffrey S. Glines
Administrative Assistant: Emily Bower

James E. Martin
Publisher

Marketing and Advertising Sales
National Advertising Manager: Larry Hilderbrand
Regional Advertising Manager/ No. California (San Francisco): Penny Rigby (415/546-7722)
No. California (San Jose), Northwest: Patricia Navone (415/546-7722)
Midwest: Robert Diftler (312/827-4477)
Southeast: Judy Sutter (404/394-0758)
Eastern Advertising Manager/ New England: Linda Holbrook (617/879-0700)
New York: Gale Paterno (201/967-1350)
So. California, Southwest, Texas: Cynthia L. Ramsey (213/201-5900)
Directory/⅙-Page Ads: Niki Stranz
Advertising Services Manager: Ray Petsche

Circulation
Associate Publisher/Director: Penny Ertelt
Single-Copy Sales Manager: George Clark
Subscription Manager: Gail Egbert
Promotion Manager: Carolyn Goudsmit
Promotion Coordinator: Billie Brownell
Fulfillment Coordinator: Doug Norde

Administration
Director: Janet McGinnis
Accounting: Pat Murphy
Facilities: Joseph Wollenweber
Personnel: Shelly Ginenthal
Technical: Nancy Canning
Assistant to the President: Christina W. Spence
Assistant to the Publisher: Loretta Giglione

Corporate
PCW Communications, Inc.

David Bunnell
Chairman

Bartlett R. Rhoades
President & CEO

Herbert Linden
Vice President

James E. Martin
Vice President

Jacqueline Poitier
Vice President

Cheryl Woodard
Vice President

Andrew Fluegelman
1943-1985
Founding Editor

January 1987
Volume 4, Number 1

Macworld™ (ISSN 0741-8647) is published monthly by PCW Communications, Inc., 501 Second St. #600, San Francisco, CA 94107. Subscription rates are $30 for 12 issues, $50 for 24 issues, and $70 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add $6 per year from Canada and Mexico; add $12 per year for surface mail or $80 per year for airmail from all other countries. For subscriber service questions call toll-free 800/525-0643 (in Colorado 303/447-9330) or write: Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529. To place new orders, call 800/524-3200.
Second-class postage paid at San Francisco.
POSTMASTER: Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80323-4529.
Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415/546-7722.
Macworld is a publication of PCW Communications, Inc. *Macworld* is an independent journal, not affiliated in any way with Apple Computer, Inc.
Apple is a registered trademark of Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. The following are trademarks of PCW Communications, Inc.: Note Pad, Macware Reviews, Open Window, Macworld Gallery, Macware News, Macworld View, Mac Bulletin, Quick Tips, Getting Started with . . . , Insights on . . . , Updates, Where to Buy, Macworld News.
Printed in the United States of America.
Copyright ©1986 PCW Communications, Inc.
All rights reserved.

BPA

A disk each month delivered to you... packed with programs for your Macintosh!

DISCOVER UPTIME. Build an exciting library of programs for less than one dollar each. You deserve value. At UPTIME value is yours. Each month over 30,000 people just like you enjoy UPTIME. Your disk arrives with eight programs and more every month...

Enjoy eight programs including two new desk accessories on each monthly disk. Make your life easier. Get more from your Macintosh. Organize and be more productive with **home management** programs. Learn with **educational** programs. Relax and enjoy monthly **games** or **adventures.** Using your Macintosh is now a snap with **tutorials** and **desk accessories.**



It's easy, inexpensive and fun. It's UPTIME! Too good to be true? There's even more! Each monthly disk has reviews of the latest software, hardware and peripherals. Save time and money. Learn the strengths and weaknesses of each item we evaluate. Shop "on the disk" in our Micro Discount Mall.

Subscribe now and save. You won't believe the low price! Satisfaction is guaranteed — or your money back. You'll be amazed at just how much comes on every UPTIME disk. Make the very next one yours. Fill out the coupon. For immediate service call toll-free:

1-800-437-0033
anytime, day or night.

LESS THAN $1 PER PROGRAM

NEW FOR ALL MACINTOSH COMPUTERS

VOLUME 1 ■ NUMBER 1

Programs

- LABEL MAGIC™
- CALENDAR DA
- FILE DOCTOR
- GINGHAM FONT
- LIVING ART
- MacSEVENS
- WE ARE THE WORD DA
- YAHTZEE

I'm a Macintosh enthusiast who wants more. Please start my subscription to **UPTIME** immediately.

I'LL BYTE!!! SAVE $89.90 → **12** Disk Issues $89.50 ☐ **6** Disk Issues $59.50 ☐ **3** Disk Issues $36 ☐ **1** Disk Issue $14.95 ☐

(Add $2 per issue in foreign countries, except Canada and APO)

Name _____

Address _____

City _____ State _____ Zip _____

☐ Payment enclosed. (Please make checks payable to UPTIME.)

Bill my: ☐ Visa ☐ MasterCard Exp. Date _____

Signature _____

Account No. _____

Send to:
UPTIME · PO Box 299
Newport, RI 02840
(401) 849-4925
10/86

Circle 537 on reader service card

OverVUE. Best Database of the Year.



Choosing a database manager is no easy task. It's by far the most confusing and fiercely competitive field in Mac software. But now your buying decision is crystal clear, because the editors of MacUser and the readers of MACazine have both selected OverVUE as the Best Database of the Year.

Said MacUser (Jan. 1986), in selecting OverVUE for its **Editors Choice Award:** "OverVUE 2.0 is a deceiving program in that the more you use it, the more you realize what it can do. Power, speed and logical menus make this a dream database."

When MACazine (Jan. 1986) bestowed OverVUE with its **Readers' Choice Award,** they wrote: "We selected OverVUE because of its ease of use, clairvoyance and statistical capabilities. The fact that OverVUE was subsequently selected by our readers as Best Database simply confirms our original assessment: the product is a jewel and the customer support a bonus!"

OverVUE's clean sweep of these two prestigious awards only confirms what everyone else has been saying all along:

Infoworld (July 8, 1985): "...it is Macintosh software done right."

Icon Review (Fall 1985): "OverVUE 2.0 is our favorite database workhorse...it simply offers the best balance of power and ease-of-use available on the market today."

Nibble Mac (Oct. 1985): "OverVUE is not only easy to set up, it's the easiest for data entry. Its tools for entering repetitive data minimizes typing time."

Online Today (electronic version — Nov. 1985): OverVUE 2.0 is a heavy-duty data management tool...It does all the things a good relational database manager should."

OverVUE's features and power make it the ultimate database choice. Clearly, users and editors alike think OverVUE is something special. We think you will, too.

So visit your nearest software dealer and purchase your very own copy of OverVUE, the Best Database of the Year.

Write for information concerning our new Mail Management and Personal Finance Templates.

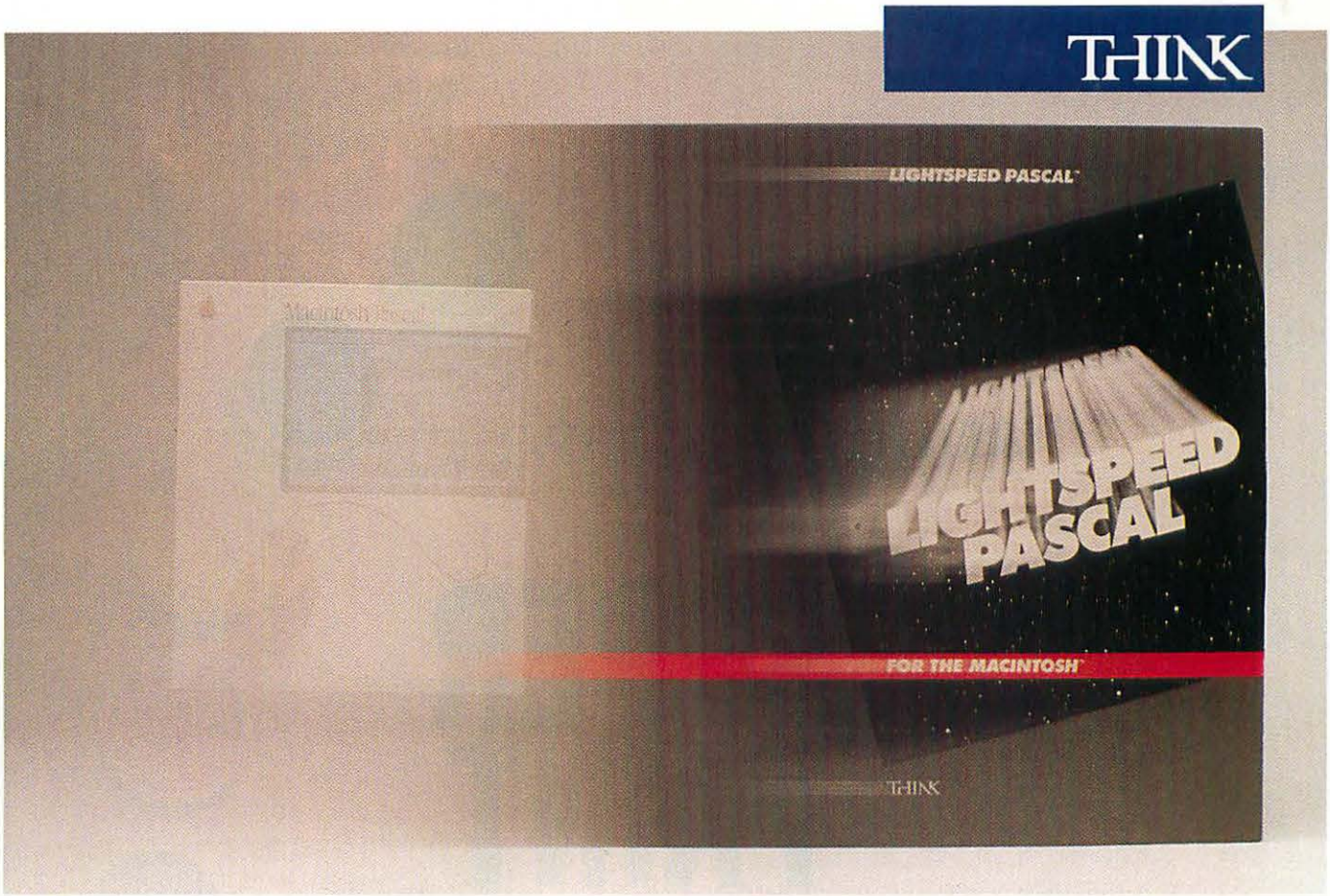


ProVUE Development Corp.
222 22nd Street • Huntington Beach, CA 92648 • 714/969-2431

Circle 77 on reader service card

Macworld is a member of the CW Communications/Inc. group, the world's largest publisher of computer-related information. The group publishes over 70 computer publications in more than 28 major countries. Twelve million people read one or more of the group's publications each month. Members of the CWCI group contribute to the *CW International News Service* offering the latest on domestic and international computer news. Members of the group include: Argentina: *Computerworld/Argentina;* Asia: *Asian Computerworld, Communications World;* Australia: *Computerworld Australia, Communications World, Australian PC World, Australian Macworld;* Austria: *Computerwelt Oesterreich;* Brazil: *DataNews, PC Mundo;* Chile: *Informatica, Computacion Personal;* Denmark: *Computerworld/Danmark, PC World Danmark, Run;* Finland: *Tietoviikko, Mikro;* France: *Le Monde Informatique, Distributique, Golden, InfoPC, Theoreme;* Greece: *Micro & Computer Age;* Hungary: *SZT Computerworld, Mikrovilag;* India: *Dataquest;* Israel: *People & Computers Monthly, People & Computers Weekly;* Italy: *Computerworld Italia, PC World Magazine;* Japan: *Computerworld Japan;* Mexico: *Computerworld Mexico;* The Netherlands: *Computerworld Netherlands, PC World Netherlands;* New Zealand: *Computerworld New Zealand;* Norway: *PC Mikrodata, Computerworld Norge;* People's Republic of China: *China Computerworld;* Saudi Arabia: *Arabian Computer News;* South Korea: *The Electronic Times;* Spain: *Computerworld/España, Commodore World, PC World España;* Sweden: *Computer Sweden, Mikrodatorn, Svenska PC World;* Switzerland: *Computerworld Schweiz;* United Kingdom: *Computer News, DEC Today, ICL Today, PC Business World;* United States: *Amiga World, Boston Computer News, Computerworld, Digital News, 80 Micro, FOCUS Publications, InCider, InfoWorld, Macworld, Micro Marketworld, Network World, PC World, Publish!, Run;* Venezuela: *Computerworld Venezuela;* West Germany: *Computerwoche, PC Welt, Computer Business, Run, InfoWelt.*

A PUBLICATION OF CW COMMUNICATIONS



LIGHTSPEED PASCAL™
THE FUTURE REPEATS ITSELF.

JANUARY 1984. (Cupertino, California.)—Apple introduces the Macintosh.™ At the press conference, six software developers, including Microsoft and Lotus, announce their commitment to the new machine. Among them is THINK Technologies, a start-up developer of advanced systems software.

THINK announces Macintosh Pascal. It is a breakthrough. For the first time, a practical interactive interpreter is available for Pascal. People can now learn to program in a whole new way. They can look inside their program and get immediate feedback. Incorporating the Mac interface in this programming environment, THINK creates a new future for the Macintosh in education.

Writing in The New York Times, Erik Sandberg-Diment says "MacPascal alone might be reason enough for the college-bound science or engineering major to purchase" a Mac. The product becomes a standard in university computer science courses. Users are enthusiastic. But in time they demand even more from THINK.

AUGUST 1986. (Boston, Massachusetts.)—THINK introduces Lightspeed Pascal at MacWorld Expo. It is a breakthrough. It utilizes new compiling and linking technology previously available only with THINK's Lightspeed C. But it goes even further. Like Macintosh Pascal, it provides the same ability to look inside a program, but without the need for an interpreter. It offers blinding speed and the ability to build large programs. The response is overwhelming. In the first two weeks THINK sells thousands.

Lightspeed Pascal marks a turning point in programming the Mac. It has all the features that made Macintosh Pascal a standard. And much more. Now users can create real standalone "double-clickable" applications and desk accessories. THINK creates a new future for Macintosh programmers.

Lightspeed Pascal is priced at $125. It is not copy-protected. The package includes a 600-page manual with extensive index. It provides complete Toolbox/OS support. It is compatible with Macintosh Pascal and Lisa Pascal.

The future is here. Order Lightspeed Pascal now.

Please send me Lightspeed Pascal today. Enclosed is $ _____ for _____ copies. ($125/copy)

NAME TITLE COMPANY

ADDRESS CITY STATE ZIP PHONE

ACCT # ☐ MC ☐ VISA ☐ AMEX ☐ CHECK ENCLOSED EXP. DATE SIGNATURE

Mail to: THINK Technologies, 420 Bedford Street, Lexington, MA 02173. Or call 617-863-5595

Lightspeed Pascal is a trademark of THINK Technologies, Inc. Macintosh is a trademark of Macintosh Laboratory, Inc. and is used by Apple Computer, Inc. with its express permission.

Circle 96 on reader service card



The best of MacPaint and MacDraw:

SUPER PAINT

SuperPaint is the most advanced graphics creation tool available for the Macintosh. The 8″X 10″ page has a layer for editing dots as in MacPaint and a layer for manipulating objects as in MacDraw.

The features read like a Christmas wish list. Full-screen editing. Multiple windows. Three levels of magnification. Reduced view. Create shapes bigger than the screen. Draw circles and squares from the center. Text that can be edited. LaserWriter fonts. Open and save MacDraw PICT and MacPaint files. Print multiple copies. Color printing with the ImageWriter II.

Best of all, for desktop publishers, there's LaserBits,™ dot-by-dot editing at 300 dots-per-inch resolution. The printed results on a LaserWriter are stunning! Paste these graphics into other programs and they retain their 300 dpi resolution!

The next generation in Macintosh graphics is here.

SILICON BEACH SOFTWARE™

See your local dealer or send $99.00 (CA residents add $5.94 tax) plus $3.00 shipping to:
Silicon Beach Software, Inc., P.O. Box 261430
San Diego, CA 92126 or call (619) 695-6956
(Visa or Mastercard accepted)
System Requirements: Macintosh 512K, Plus, XL (1MB)

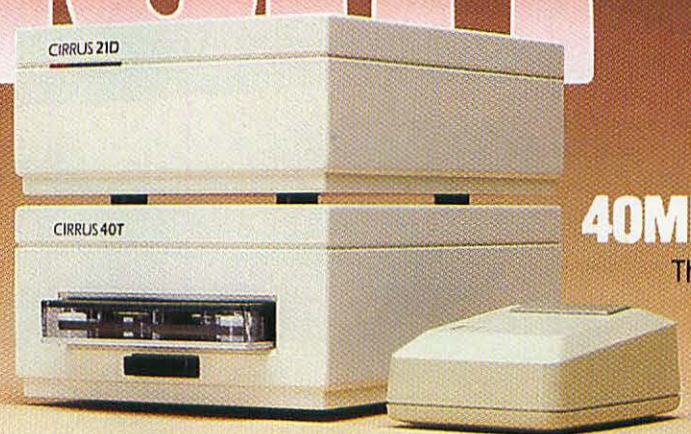
SUPER PAINT

When all you want is a masterpiece

Macintosh is a trademark licensed to Apple Computer, Inc. MacPaint and MacDraw are trademarks of Apple Computer, Inc. LaserBits is a trademark of Silicon Beach Software, Inc. ©Copyright, 1986, Silicon Beach Software, Inc.

New for the Mac Plus!

SMALL BUT MIGHTY!



CIRRUS 40FD
40MB FAST DISK

Here's hard disk performance for the MAC PLUS that's as fast as it comes! The CIRRUS 40FD delivers 28ms seek time and 40MB of storage in a small, classy, package that's feature rich. Two SCSI interfaces. Auto park. Locking heads. Formatted and ready to run. The CIRRUS 40FD supports password protection, multiple volumes on a single disk and can treat multiple hard disks as one volume. That means you can daisy chain up to 7 CIRRUS hard disks and treat them as one. The CIRRUS 40FD is cool, quite, reliable.

CIRRUS 21D 21MB Hard Disk is also available.

CIRRUS 40T
40MB TAPE BACKUP

This small wonder can do everything the CIRRUS Hard Disks can do. In fact it operates identically. That's why it's so incredibly easy to use. The CIRRUS 40T gives you image and file by file backup and restoration. You can even restore file by file from an image backup. Each system includes two SCSI interfaces. Tapes are formatted and support volumes and password protection. And, there's full data correction on the tape. Cool. Quiet. Diminuitive. Your data is safe with the CIRRUS 40T.

BIG-LEAGUE BACKING FOR POWER USERS

Here's the power...power users want! We build high quality, high performance equipment designed to meet the needs of serious users. So if you're a power user now, or ready to become one, call or write today for more information about the CIRRUS 40FD, 21D, and 40T. And, don't forget to ask about our first class warranty and service protection. We're seasoned experts in mass storage with more than 15,000 systems installed in the field. And, we stand behind every product we sell.

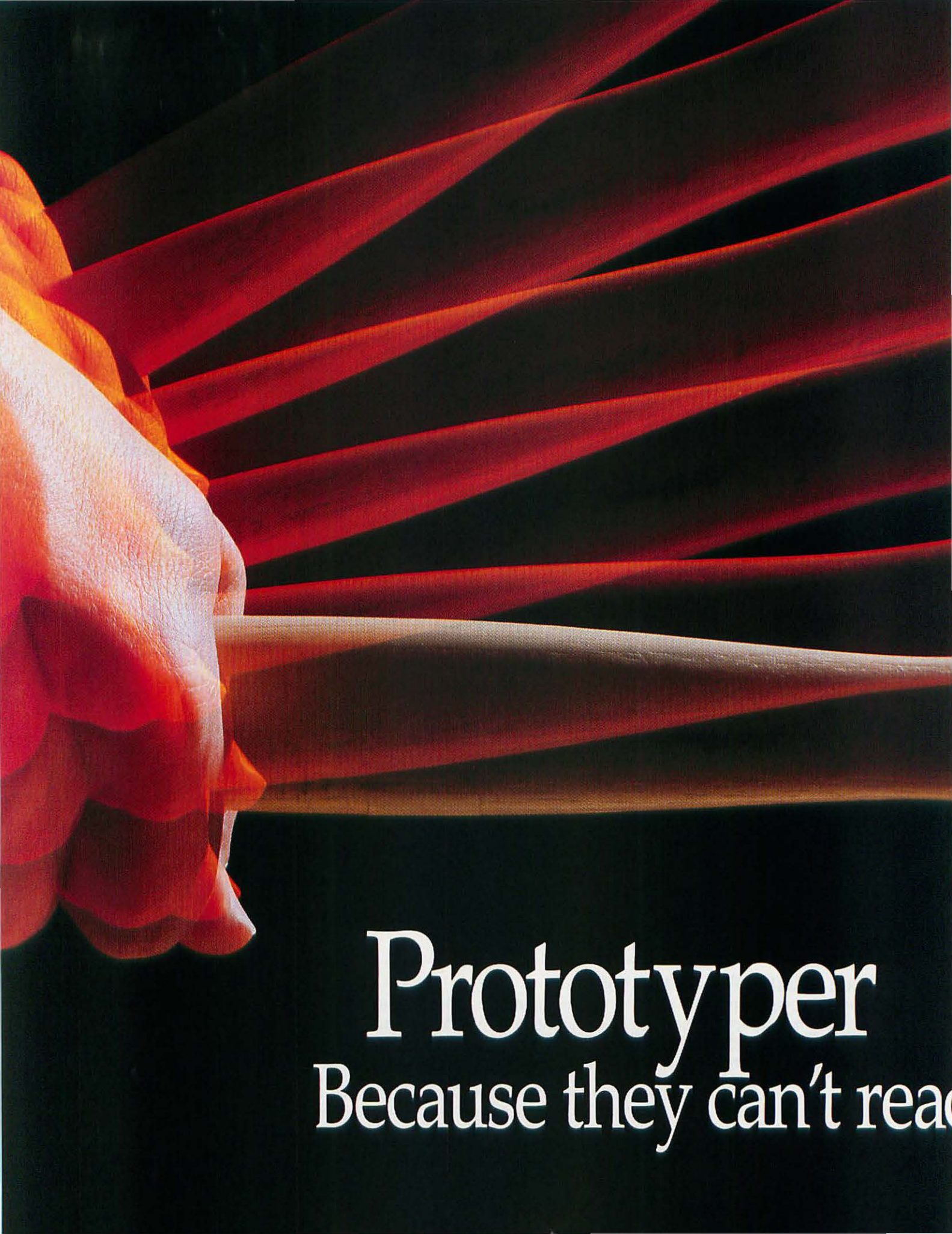
CALL TO ORDER TODAY: 800-522-2237 • In Oregon and Alaska call: 503-626-6877
VISA & MASTERCARD accepted • OEM & Dealer inquiries welcome

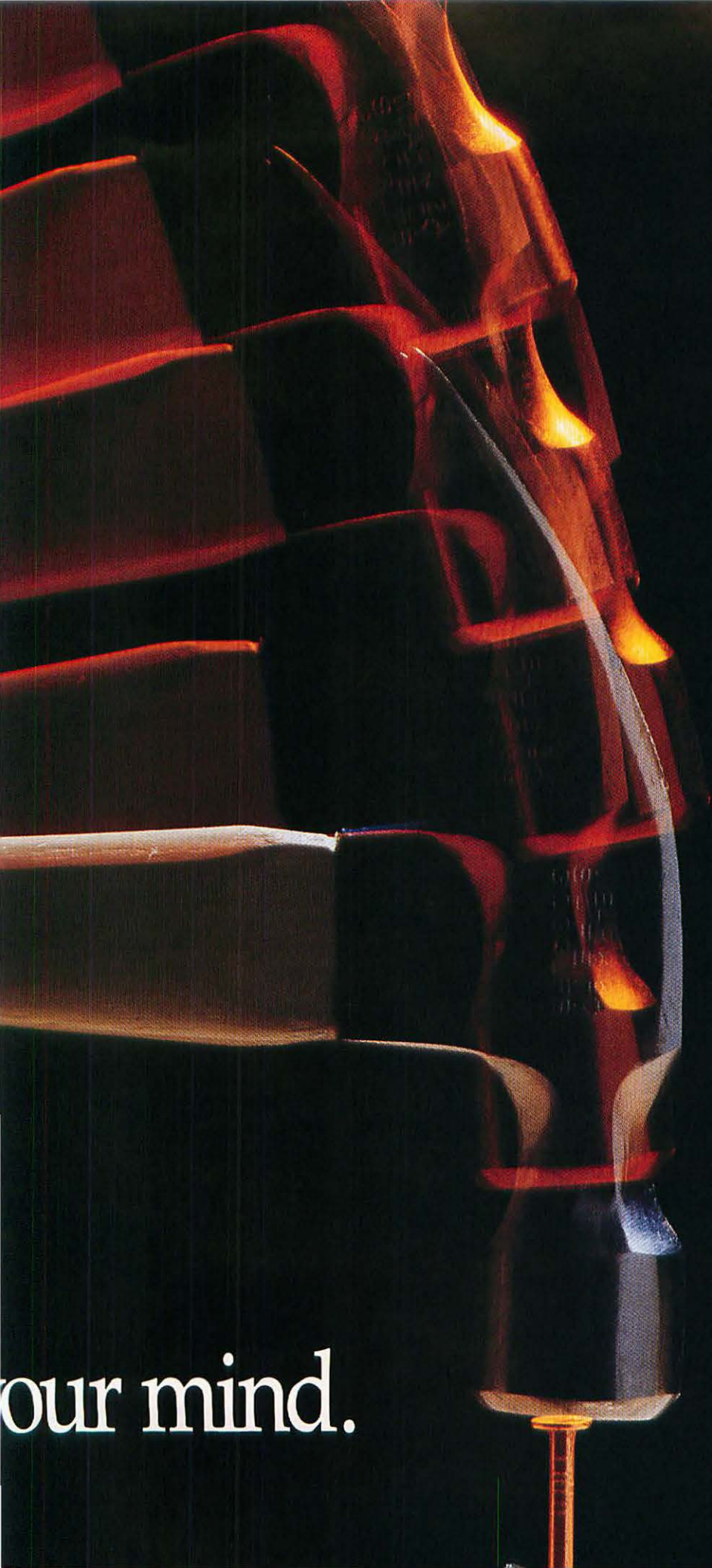
Kamerman Labs

7861 SW Cirrus Drive, Beaverton, OR 97005 • 503-626-6877 • Telex 501 886

Mouse not included. Specifications and prices subject to change without notice. Mac Plus is a registered trademark of Apple Computers, Inc. Copyright © 1986 Kamerman Labs.

Circle 599 on reader service card


Prototyper
Because they can't rea



our mind.

What good is a new idea if you keep it to yourself?

Think about it—there are *plenty* of people who would like to see your ideas.

Programmers building applications.
Writers creating manuals.
Management worrying over deadlines.
Investors wanting demonstrations.
And of course, end users.

The Prototyper allows these types of people to communicate more effectively. To visualize ideas. Share ideas. Test ideas.

Which means reaching solutions earlier.

The Prototyper lets you build prototypes that *look*, *act*, and *feel* exactly like Macintosh applications. With menus, buttons, and windows that respond when selected, opened, or scrolled.

Your prototypes can run with or without interaction, like guided tours. And they're stand-alone programs, so people don't have to own the Prototyper to run your prototypes.

The Prototyper displays your ideas so clearly, and allows changes so easily, that you'll be able to produce a better product in less time.

Oh, did we mention that absolutely no coding is involved?

Let them read your mind.

Prototyper.

SmethersBarnes

Available January 1987
For more information, call **1·800·237·3611**
In Oregon call 503·245·7270

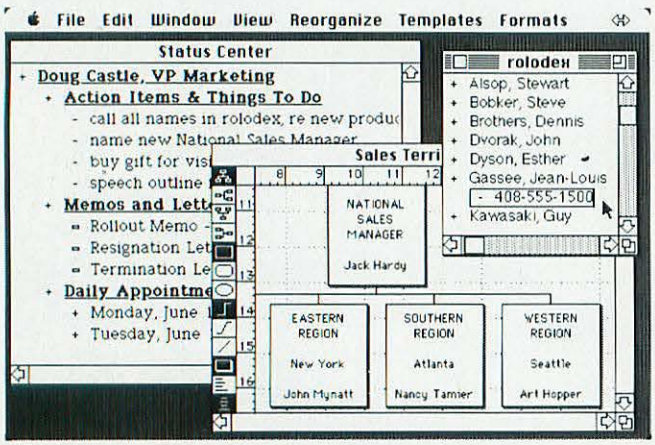
Prototyper and the SmethersBarnes logo are trademarks of SmethersBarnes. Macintosh is a trademark licensed to Apple Computer, Inc.

Circle 438 on reader service card

MORE™

The First Integrated Idea Processor/Idea Presenter

MORE is the third generation idea processing software product from Living Videotext, the company that invented Macintosh idea processing with ThinkTank 128 and ThinkTank 512.



MORE is more than an idea processor, because Bullet Charts and Tree Charts make it easy to graphically present your ideas. That's why we say that MORE is the first **integrated idea processor/idea presenter.** It's a complete system for developing and refining your ideas. Then it quickly and automatically transforms your ideas into a presentation that looks so good you'd think a professional spent hours working in MacDraw.

MORE is for people whose primary product is their thinking—for example, managers, consultants, professionals, advertising and public relations people. MORE is widely used in corporations where presentations are a normal course of daily business. Reporters can track their contacts, and cross-reference them by specialty. It's great for students and teachers too!

MORE Intelligent Idea Processing

Hoisting: focus on one section of an outline
Cloning: dynamic outline cross-references
Mark + gather: automated reorganization
Pattern matching: context sensitive and intelligent
Levels: visual using size and style
From Living Videotext—the undisputed leaders in idea processing technology

MORE Desktop Presentations

Bullet charts: from outlines to overhead transparencies, in seconds
Tree charts: for timelines, project plans and organization charts
Direct transfer: to page layout programs

MORE Desktop Productivity

Outline templates: create standard outline "forms"
Time management: smart calendar templates, time and date stamping
Auto dialer: dial a phone number from any headline
Outline math: for expense reports and budgets
Windows: word processing or graphics can be attached to any headline

MORE Macintosh Power

Standard editing: click anywhere to edit any text
Windows: up to six open at once, Macintosh standard
Window tiling: horizontal, vertical, or diagonal
Transfer outlines: to MacDraw, MacWrite, Microsoft Word

Call Today
1-800-822-3700
in California
1-800-443-4310

LIVING VIDEOTEXT
2432 Charleston Road, Mountain View, CA 94043 415-964-6300

Circle 50 on reader service card

Not copy protected. Suggested retail price $295. For all Macintosh systems with 512K or more.
MORE, ThinkTank 512, ThinkTank 128, and ThinkTank are trademarks of Living Videotext. The names of the products above may be trademarks or registered trademarks.

Mac Bulletin

Mail-Order Firm Goes Chapter 11

On October 29, the personal computer mail-order supplier Northeastern Software filed for protection from creditors in bankruptcy court in Bridgeport, Connecticut. Northeastern's lawyer, James Verrillo, told the *Wall Street Journal* that price wars in the mail-order business led to the Chapter 11 filing. But prior to that move, reports *Macworld* and *PC World* publisher Jim Martin, Northeastern "claimed they had overextended themselves with a tremendous amount of advertising." Northeastern ads in the two magazines were refused by Martin after a letter of complaint about Northeastern, published in the October issue of *Macworld*, generated a torrent of additional complaints about paid-for products never sent, stalled refunds, and other examples of poor service and questionable business practices.

Common LISPs

ExperTelligence of Santa Barbara, California, developer of AI languages and tools for the Macintosh, has introduced ExperCommonLISP, a full implementation of the language that works according to the LISP committee standards. The language provides complete access to the Toolbox and includes a Smalltalk-like class system.

Unlike the company's initial product, ExperLisp 1.5, ExperCommonLISP lets you create stand-alone applications and has a feature that reduces the size of programs so that you don't need to carry the extra baggage of LISP around with applications. ExperTelligence also distributes a portable LISP, Le Lisp, and Prolog language products.

Coral Software of Cambridge, Massachusetts, is finishing up its version of Common Lisp, due out in a few months. Coral Lisp, now available, is a subset of the Common Lisp under development.

Academic Honors

Apple Computer is offering $50,000 in prizes for outstanding academic applications that run on Apple computers in United States colleges and universities. The judges—including faculty, campus computing services representatives, one student, and *MacPaint* author Bill Atkinson—will award a $20,000 grand prize and four prizes of $7500 each, chosen from entries in four areas: In-Class Instruction, Teaching Tools, Study/Research Tools, and Development Tools. The deadline for entry is February 28, 1987. For details and guidelines write to Wheels for the Mind Awards, Apple Computer, 20525 Mariani Ave., MS 23-E, Cupertino, CA 95014.

Hard Disk Softeners

Two utilities that make life easier for Apple SCSI hard disk owners are now available for the Apple HD 20. The *Find File* desk accessory lets you locate an HFS file in the Finder from an application. The *Disk First Aid* "scavenger" examines the data structures on a disk and attempts to repair any damage it finds. Both are available from dealers and user groups.

The MacEnhancer Lives

The MacEnhancer, an adapter with extra ports first introduced by Microsoft a few years ago that has since been languishing, was reissued by Softstyle of Honolulu. The $245 Softstyle MacEnhancer attaches to a Mac serial port and provides an IBM PC-compatible printer port, two RS-232C serial ports, and an RS-422 Macintosh-style serial port. Your net gain is three ports, which means you don't have to adjust cables every time you want to use a different printer. Softstyle includes 15 printer drivers and easy-to-use installation software.

Cross-Development in C

Programmers working on projects destined for the Apple IIGS now have a faster way to finish code in the MactoGS Assembler Linker from Consulair of Portola Valley, California. The cross-development tool runs on a 512KE Mac but is fastest on a 68020-enhanced Mac. Besides being compatible with the Apple II Programmer's Workshop assembler, it produces complete stand-alone IIGS applications and allows symbolic debugging.

Designer Layouts

Recognizing that its page-layout program delivers the means of publication design into untrained hands, Aldus has brought out the first in a series of templates for *PageMaker* that take some of the guesswork—and hopefully some of the ghastly—out of desktop publishing projects. *PageMaker Portfolio: Designs for Newsletters* ($79) offers 21 templates based on seven fundamental designs. Others in the series will offer designs for catalogs, price lists, brochures, and fliers.

Site Licensing on the Mac

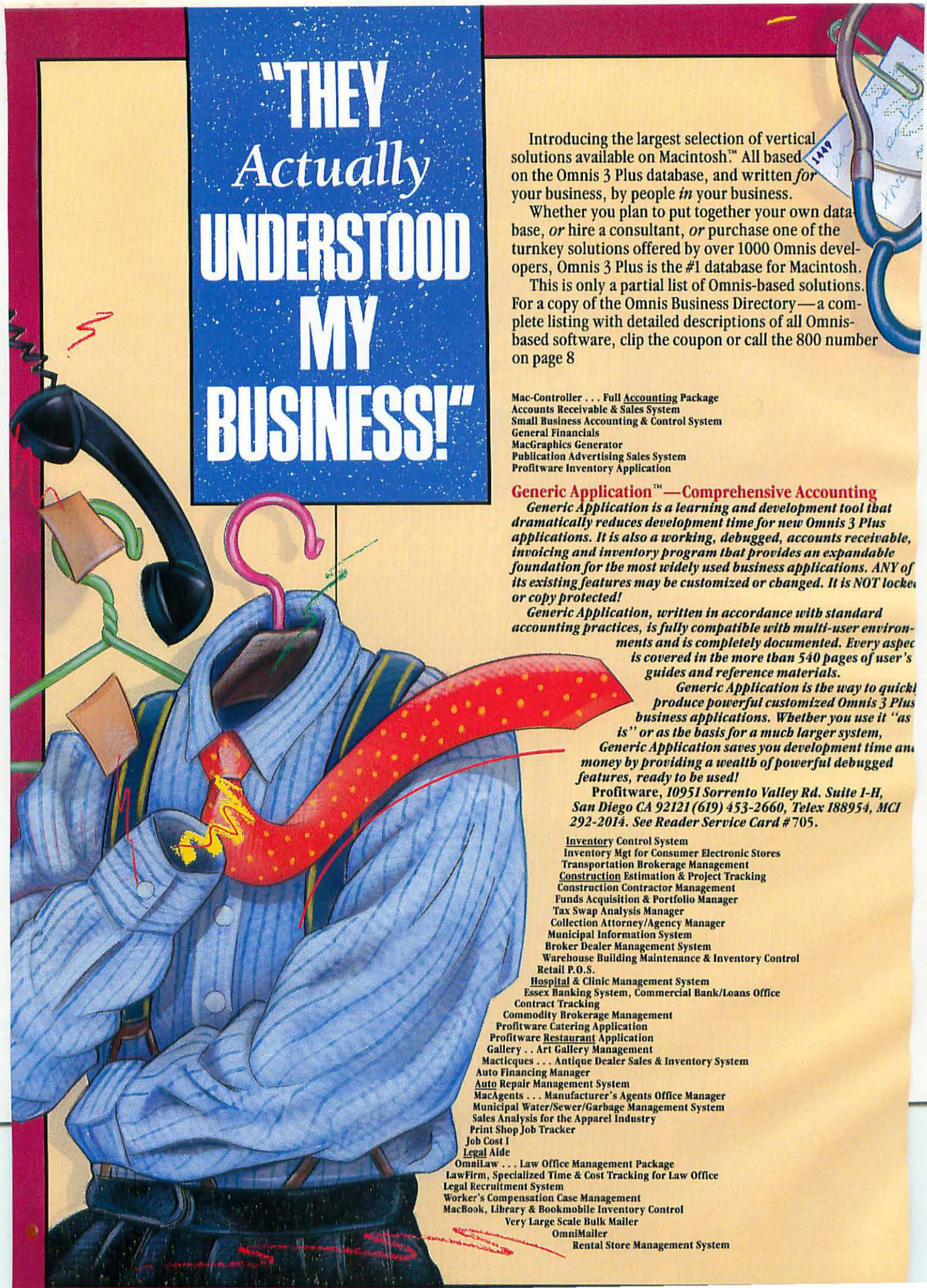
Solutions, Inc., recently announced a site licensing program for its *Glue* software that allows people to open transferred files from programs such as *Excel* or *Jazz* without having a copy of the application. For $7500, companies may purchase the right to make unlimited copies of *Glue* for use at a single company site—or for $22,000, unlimited copies at any site, including employees' homes. The licensing program—the first offered for Mac software—is significant because other publishers of important business software for the Mac have decided against site licenses. Microsoft, for example, offers a hefty discount to companies that purchase at least $100,000 worth of programs, but according to spokesperson Marty Taucher, the company doesn't believe in site licensing because "that releases

(continues)



SYSTAT™

LESS BULK MORE STATISTICS!



"THEY *Actually* UNDERSTOOD MY BUSINESS!"

Introducing the largest selection of vertical solutions available on Macintosh.™ All based on the Omnis 3 Plus database, and written *for* your business, by people *in* your business.

Whether you plan to put together your own database, *or* hire a consultant, *or* purchase one of the turnkey solutions offered by over 1000 Omnis developers, Omnis 3 Plus is the #1 database for Macintosh.

This is only a partial list of Omnis-based solutions. For a copy of the Omnis Business Directory—a complete listing with detailed descriptions of all Omnis-based software, clip the coupon or call the 800 number on page 8

Mac-Controller . . . Full Accounting Package
Accounts Receivable & Sales System
Small Business Accounting & Control System
General Financials
MacGraphics Generator
Publication Advertising Sales System
Profitware Inventory Application

Generic Application™—Comprehensive Accounting

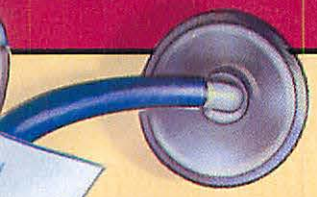
Generic Application is a learning and development tool that dramatically reduces development time for new Omnis 3 Plus applications. It is also a working, debugged, accounts receivable, invoicing and inventory program that provides an expandable foundation for the most widely used business applications. ANY of its existing features may be customized or changed. It is NOT locked or copy protected!

Generic Application, written in accordance with standard accounting practices, is fully compatible with multi-user environments and is completely documented. Every aspect is covered in the more than 540 pages of user's guides and reference materials.

Generic Application is the way to quickly produce powerful customized Omnis 3 Plus business applications. Whether you use it "as is" or as the basis for a much larger system, Generic Application saves you development time and money by providing a wealth of powerful debugged features, ready to be used!

Profitware, *10951 Sorrento Valley Rd. Suite 1-H, San Diego CA 92121 (619) 453-2660, Telex 188954, MCI 292-2014. See Reader Service Card #* 705.

Inventory Control System
Inventory Mgt for Consumer Electronic Stores
Transportation Brokerage Management
Construction Estimation & Project Tracking
Construction Contractor Management
Funds Acquisition & Portfolio Manager
Tax Swap Analysis Manager
Collection Attorney/Agency Manager
Municipal Information System
Broker Dealer Management System
Warehouse Building Maintenance & Inventory Control
Retail P.O.S.
Hospital & Clinic Management System
Essex Banking System, Commercial Bank/Loans Office
Contract Tracking
Commodity Brokerage Management
Profitware Catering Application
Profitware Restaurant Application
Gallery . . Art Gallery Management
Macticques . . . Antique Dealer Sales & Inventory System
Auto Financing Manager
Auto Repair Management System
MacAgents . . . Manufacturer's Agents Office Manager
Municipal Water/Sewer/Garbage Management System
Sales Analysis for the Apparel Industry
Print Shop Job Tracker
Job Cost I
Legal Aide
OmniLaw . . . Law Office Management Package
LawFirm, Specialized Time & Cost Tracking for Law Office
Legal Recruitment System
Worker's Compensation Case Management
MacBook, Library & Bookmobile Inventory Control
Very Large Scale Bulk Mailer
OmniMailer
Rental Store Management System



pharMACy
LIFELINE . . . Blood & Blood Donor Tracking System
OMNIVET . . . Veterinary Practice Management System
Wednesday's Off . . . Medical Billing & Patient Records Management
CADUCEUS . . . A Comprehensive Medical Office Management System
The Physicians Office Management System
MedQuest . . . Medical Office Management
Medi-Express, Practice Management System
MacDoctor
ESP Optometric
Allied Support's Medical Clinic Time & Billing
MAC BACK
The Certified Dental Assistant
Shana Dental System
Association Membership System

The Membership Management Package™

Handles tracking and maintenance functions for any association or club: maintains the basic demographic information for each member, special interest groups and committees. Yearly registrations are processed, updating the members' information and printing new membership cards. Prints multiple mailing lists for SIGs or committees and has directories of the membership by state, province or renewal date.

Customization is available. Variations of the package to handle league registration for sports, conventions for an association, or athletic events, are already in place.

Up & Running Systems Limited, *333 River (613) 748-6050. See Reader Service Card #*706.

Convention Handling System
Athlete Tracking Systems
Athletic Event Systems
League Registration Systems
CLIMB . . . Club Listing & Information Management
Quotation Management System
Omni-File Tracker
MacCheck Writer
Business Checkbook Helper
FOLLOW > UP . . . Track office work
The Message Center
Time Wand Bar Code Reader
The Church Business Manager
Church Stewardship Program
Non-Profit Solution

Polymath Small Business Solution

Polymath specializes in database applications for small businesses and organizations that need to manage complex relationships among members, clients or donors, or between them and their transactions. Current products include a non-profit package for tracking donations and grants, a theatre or theatrical agency package for tracking talent and productions or events, a student and course tracking module for schools or independent trainers, a module for tracking work hours and wages for intermittent part time employees, and modules for dealing with reflexive relationships within a single file, such as family trees or sponsorship lines.

Modules, such as inventory management and purchasing, accounts receivable, journal-ledger systems, are available to meet your business needs. All are designed for creating custom applications for specific clients and can be tailored to minimize the wasted disk space generated by "off-the-shelf" application packages.

We understand that each business and each business person has a unique need for information gathering and management and we do our best to provide a finished product ideally suited to that individual need.

Polymath Program Productions, *P.O. Box 2327 (for orders), 3242 Bayo Vista Avenue, Alameda, CA 94501, (415) 522-2342, CompuServe: 71076,1135. See Reader Service Card #*707.

OmniPayroll
MacPayroll Plus . . . A Canadian Payroll System
Payroll·Bridge
HUMAN RESOURCES . . . Personnel Administration System
HEADHUNTER!
Mineral Identification & Inventory System
Macintosh Magazine Data
ROYALTY . . . Professional Genealogy Management System
Album Collection Organizer
The Studio Photographer
STUDIO MANAGER
Retail Engine . . . Complete Management System for the Apparel Retailer
Independent Jewelers Small Business Accounting
The RETAIL Shop
The PRO Shop
The SHOE Shop
POSICon . . . Point of Sale & Inventory Control
P·O·S/Mac
Profitware Time & Billing Application
Professional's Billing Package
MacConsultant . . . Consultant Time/Billing & Project Analysis System
MacLord . . . Property Management
MacLord . . . Hotel Management
Roybal Sales Manager
Sales Lead Management System
Sales & Marketing Manager
Lead Tracking/Follow-up
MacSchedule . . . for Service Businesses
PMCS . . . Project Management Control System
Concrete Cylinder & Nuclear Density Tests Tabulation
Essex Market Surveyor
RESPONDER . . . Equipment Maintenance & Time Management
Work Order Management System

Depot™ Repair System & APPLAUSE™ Automated Dispatch

For service businesses of any size. The Depot Repair System is an improved way to perform service and cost controls, increase profits and report on service status, warranty costs, inventory and spares using a Macintosh computer.

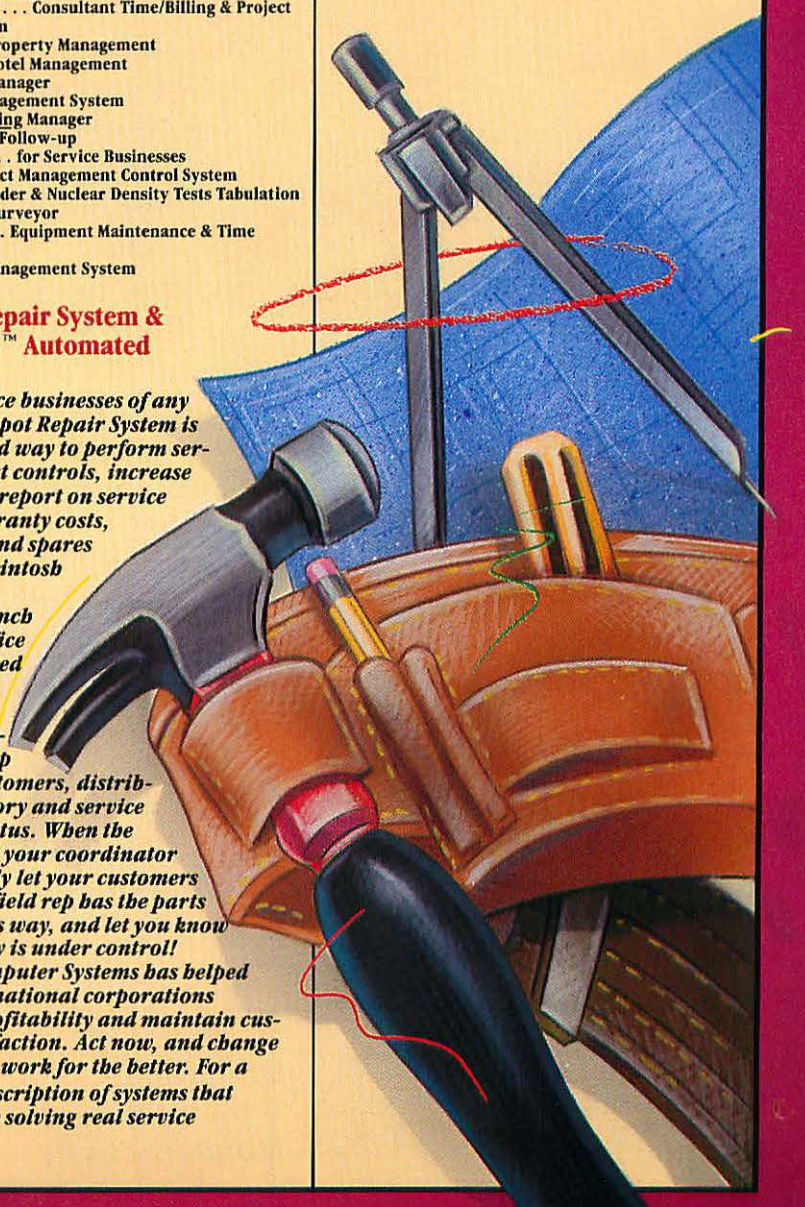
On the bench or in the office the integrated APPLAUSE Automated Dispatch System will keep track of customers, distributed inventory and service contract status. When the phone rings your coordinator can instantly let your customers know your field rep has the parts and is on his way, and let you know profitability is under control!

XCEL Computer Systems has helped many international corporations improve profitability and maintain customer satisfaction. Act now, and change the way you work for the better. For a complete description of systems that we think are solving real service problems, call or write:

XCEL Computer Systems, *255 Park Avenue, 10th Floor, Worcester, MA 01609 (617) 797-3025 Applelink #VO 154. See Reader Service Card #*708·

Leasing System
Equipment Rental Program
Counseling Clinic Management
PERSISTENCY . . . Data management for Insurance Agencies
The Computer Store Manager
The Collector
Handy Mac . . . Janitorial Business Management
Manage-U-Store
Tender Loving Kare . . . Wholesale/Retail Florist
MacAuction
MacHorse . . . Horse Farm Information Manager
Sand Mountain HFD . . . Historical Funeral Database
MacForwarder . . . Automated Exports Management System
TELEPROMPT . . . Multi-user Automated Telemarketing
Registrar's Office . . . Registration & Academic Administration
Teacher's Aid
School Data Manager
QUICK EASY SIMPLE for Video Stores
Video Rental Manager

OMNIS 3 PLUS™



"A SOLUTION *is only as* SOLID *as its* FOUNDATION."

That's why all of the solutions on the previous pages were developed using Omnis 3 Plus. Because, quite simply, there is no other database which is as powerful, as fast, as reliable, as flexible or as easy to program as Omnis 3 Plus.

In fact, it's for those same reasons that Omnis 3 Plus is the fastest selling relational database available on Macintosh, selling more than all the others combined. And if you thought the Macintosh didn't have a world class database, think again! Omnis 3 Plus is the second fastest selling relational database in the world.

One feature which helped Omnis 3 Plus to become so popular is its ability to import data. Omnis 3 Plus accommodates so many data formats that it can import data from all popular microcomputer databases, spreadsheets, and even some word processors. So you don't have to wait to import your dBase™ II, III or III Plus data—you can do it right now with Omnis 3 Plus.

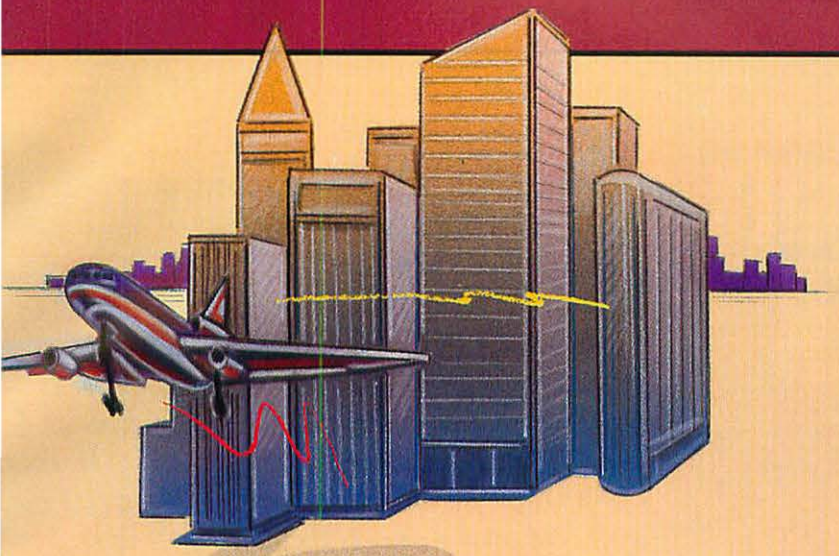
It would take twenty pages to list all of the features that Omnis 3 Plus has . . . so we'll list the one that it doesn't have: "memory caching."

Omnis 3 Plus doesn't use memory caching because we know that keeping data in memory instead of writing it to disk is very dangerous. When your data is in memory, it could be lost from a power failure, a system crash, or someone knocking out the plug—things that happen all the time with personal computers. But what's even worse is that you could lose more than just the last few records . . . you could lose your entire database!

But if memory caching is so dangerous, you might be wondering why so many other databases use *it*. They use it to make the database *seem* fast. Omnis 3 Plus doesn't use it because it doesn't have to "seem" fast—it *is* fast. Very fast. Omnis 3 Plus can retrieve one record in a file of 100,000 records in under .17 seconds. Many databases would have trouble even storing 100,000 records.

No microcomputer database can equal the performance of Omnis 3 Plus. When you purchase Omnis 3 Plus, you're not just getting the best database on Macintosh, you're getting the best database on any microcomputer.

See Reader Service Card #703.



You're in good companies . . .

A few of the companies using Omnis 3 Plus:

Adobe Systems
Alcoa Corporation
Aldus Corporation
American Express
American Systems Engineering
Apple Computer
Arco Oil & Gas Co.
Arthur Young
Citibank
Dade County Police Department
Dartmouth College
Dow Chemical
Dravo Corporation
Eli Lilly & Co.
Federal Express
General Computer Corporation
General Dynamics
Gestedner Office Systems
Herbal Marketing Associates
Hughes Aircraft Co.
John Deere
McDonnell-Douglas
Motorola Corporation
Nicolet Analytical
Owens Corning Fiberglass
Raytheon Co.
Rockwell International
Sara Lee Corporation
Seattle First National Bank
Sequoia Insurance Co.
Sony Corp.

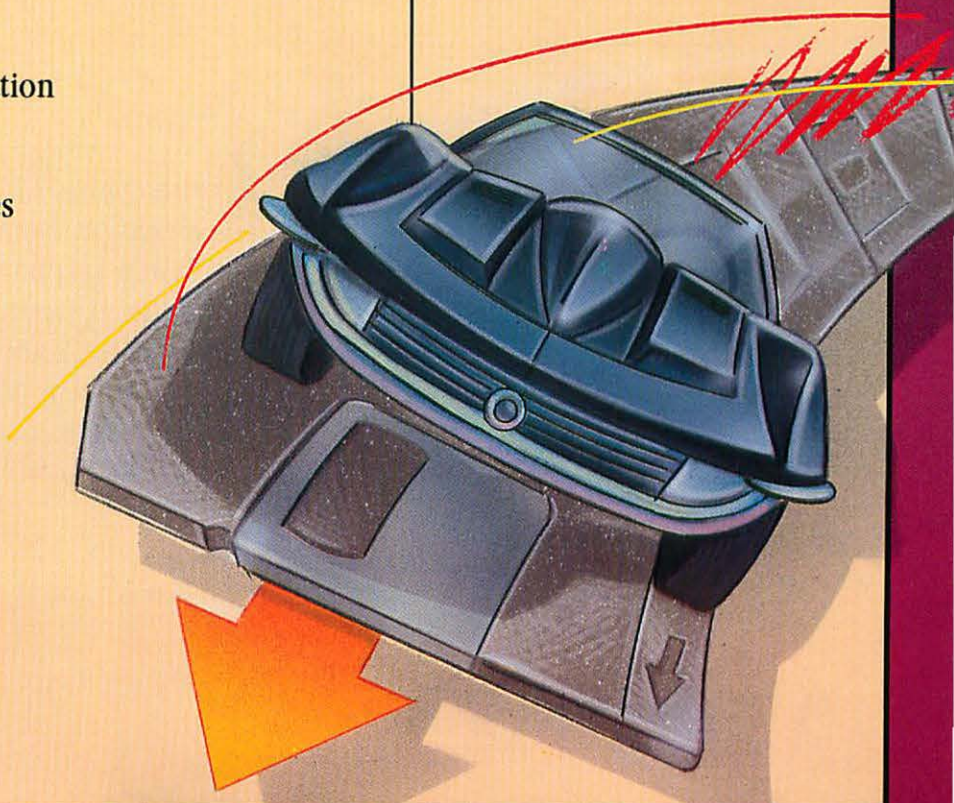
OMNIS 3 PLUS™

"With Omnis, productivity has increased. We now have a central location for all of our contract related data and can access the information quickly."

Arco Oil & Gas Co.

"Dravo has about twenty databases on Omnis. We migrated from an IBM mainframe application to Omnis and feel we have gained much needed flexibility."

Dravo Corporation.



"It Provided MINICOMPUTER POWER at MICRO PRICES."

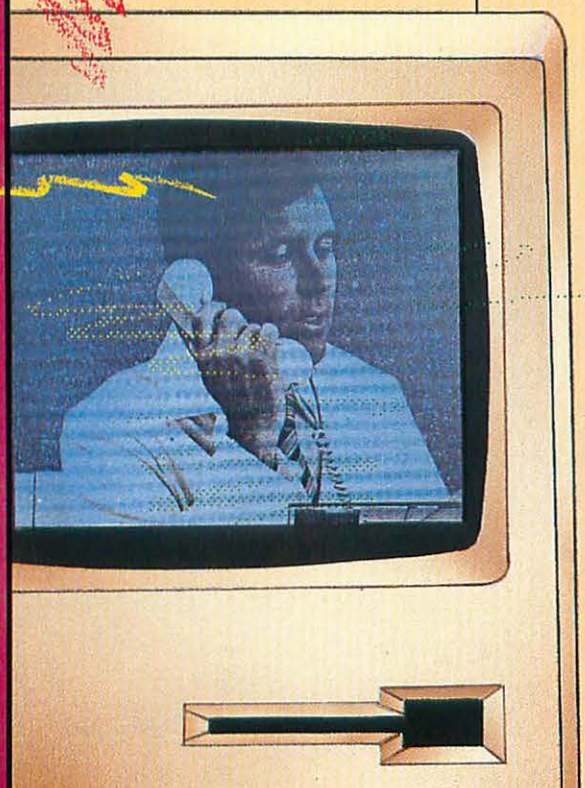
Advances in high speed connections and shared hard disks allow networks of Macintosh computers to often outperform minicomputers.

"We run Wabash Computer Systems (6 stores, $25 million sales) entirely on Macintosh Plus Computers using Omnis 3 Plus. We've networked Macintoshes in our Corporate Office, Accounting Department, and Art and Advertising Department. Each retail store runs on Omnis and generates invoices, tracks sales, serial numbers inventory, accounts receivable and customer lists . . . which are fed back to our Corporate Office.

Our user-friendly Omnis applications and Macintosh Computers are replacing a not-so-friendly Hewlett Packard HP-3000/42 multiuser multi-tasking Mini Computer that cost $250,000 to buy (with software) and over $7000 a month to support (exclusive of salaries)! If you'd rather buy our Mini Computer than a Macintosh, call us. We'll sell it to you at a very attractive price."

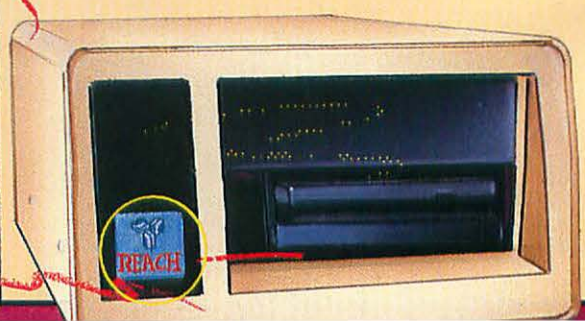
Lin Austin, CEO, Wabash Computer Systems





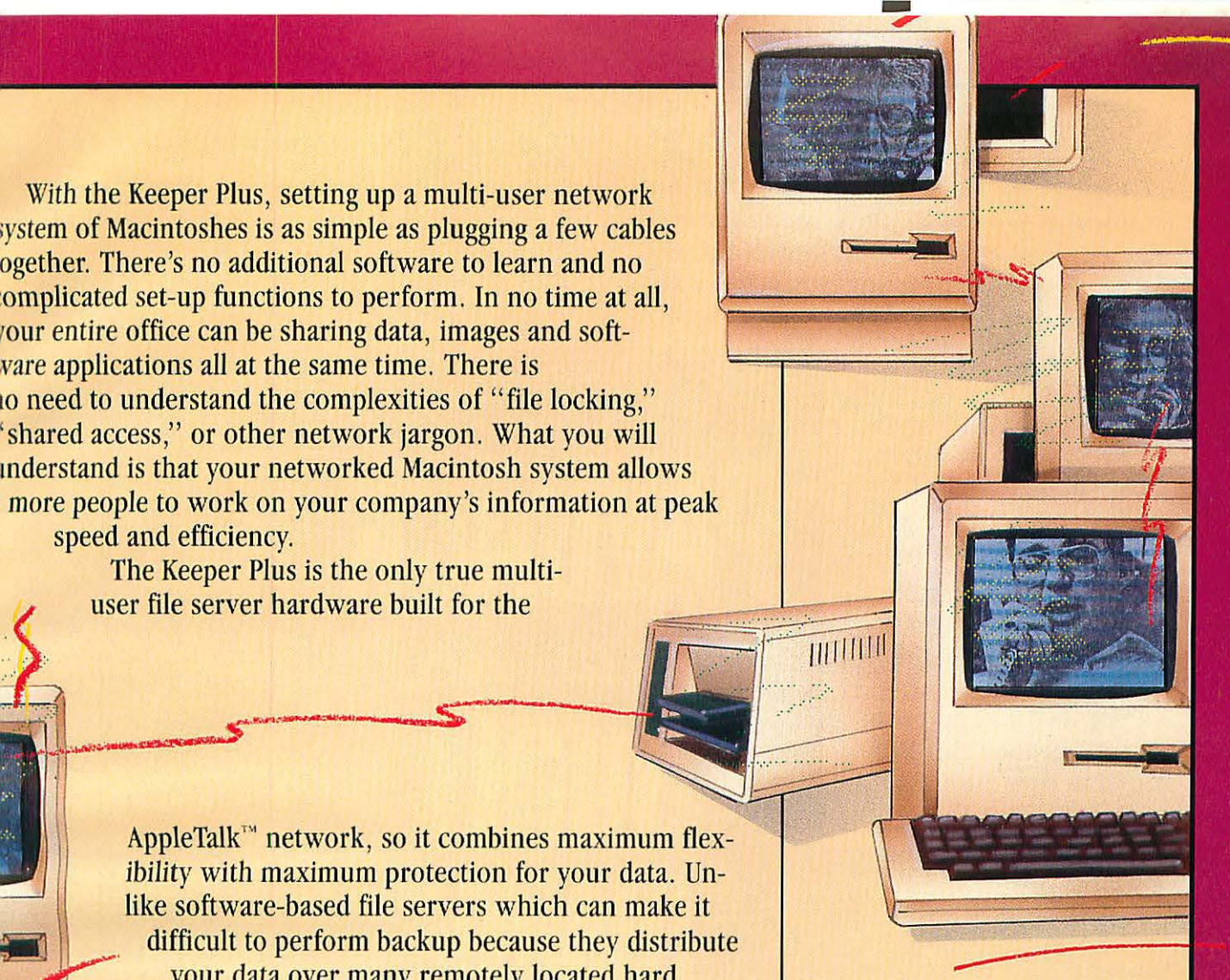
A Keeper™ Plus file server on a network with Omnis 3 Plus provides a powerful solution to business problems.

When you have a useful solution, you'll quickly find that it's being used by many people around your office. That's good: the more use it gets, the faster it pays for itself. To accommodate your growth you'll want to be able to access your data multi-user from many Macintosh computers.



With the Keeper Plus, setting up a multi-user network system of Macintoshes is as simple as plugging a few cables together. There's no additional software to learn and no complicated set-up functions to perform. In no time at all, your entire office can be sharing data, images and software applications all at the same time. There is no need to understand the complexities of "file locking," "shared access," or other network jargon. What you will understand is that your networked Macintosh system allows more people to work on your company's information at peak speed and efficiency.

The Keeper Plus is the only true multi-user file server hardware built for the AppleTalk™ network, so it combines maximum flexibility with maximum protection for your data. Unlike software-based file servers which can make it difficult to perform backup because they distribute your data over many remotely located hard disks, one Keeper Plus of up to 120 megabytes shared by many Macintoshes, and the Keeper Plus' removable hard disk cartridges make backup of your important business data simple and fast.



Advanced features such as print-spooling, automatic file compaction and expansion, capacities from 20 to 120 megabytes and multiple drives on a single network assure you that the Keeper Plus will be on the cutting edge of Macintosh file-serving technology for a long time to come.

The Keeper Plus is compatible with software and hardware gateways and bridges from AppleTalk to IBM mainframes, PC's, DEC VAX, and other AppleTalk networks.

All the features of the Keeper Plus make it an unparalleled choice for a network of Macintosh computers.

For more information on the Keeper Plus, call 1-800-523-8392 (or 512-280-1977 in Texas).

REACH
TECHNOLOGIES INCORPORATED

The best networking solutions are within REACH.

See Reader Service Card # 704

"We tried many file serving software applications with hard disks before we settled on the Keeper Plus. All 14 users that share the Keeper Plus are extremely happy with its functionality and reliability."

**—Chuck Mell,
CONTEL**

"The Keeper Plus is the easiest file server to use for the Macintosh. It's met or exceeded my expectations in every area."

**—Al Stirpe,
General Electric
Company.**

Applications designed specifically for your business or profession, the most powerful database, and the simplest, most flexible network file-server available for any personal computer, combine to give you an office system that pays for itself.

A single user Macintosh or a Keeper Plus network of Macintoshes on AppleTalk will perform like a mini-computer at a fraction of the expense. Low entry prices, easy expansion and upgrading keep your cost of computing low.

Fast, accurate access to the information that is integral to your business allows you to process work more quickly, keep in touch with your customers or clients, smooth your inventory flow or shorten your receivables cycle, and maintain that professional image that raises you high above the competition. Factors th affect your bottom line and yield a high return for your computer investment.

Low costs and high return are your guarantee that a solution will pay for itself. Software that has been installed at over 100,000 sites worldwide is your assu ance that these solution can work for you.

"The PAYBACK Started RIGHT AWAY."

OMNIS 3 PLUS™ FROM BLYTH SOFTWARE

Omnis, dBase, Keeper Plus, Macintosh, The Membership Management Package, Depot/APPLAUSE, GENERIC Application and Appletalk are trademarks of Blyth Software, Ltd., Ashton-Tate, REACH Technologies Inc., McIntosh Laboratory, Inc., Up& Running Systems, XCEL Computer Systems, Profitware and Apple Computer, Inc. respectively.

"The largest auto dealership in our area asked us to install a computer system to handle sales tracking, inventory control, and in-house auto-financing receivables. After the data was entered and we fired up the application, we immediately recovered the cost of the 2 Macs an the multi-user Omnis 3 package in money that, up to that point, my client didn't know be bad!"

Larry Cline
MicroSystems Consulting,
Virginia Beach, VA.

"Omnis is fast. We want to pay what's fair and get claims concluded as soon as possible. The faster we can evaluate a claim, the better.

"Under the old system, people who were typing checks had no idea how much they were writing out in a day. With this system, at the end of the day the Omnis check register gives a total of the amount spent that day, so all our offices can keep in touch with spending.

"Omnis takes full advantage of the Mac interface so that an employee is up and going in under an hour. You get much more productivity."

Bob Hoppie
Administrative Claims Manager,
Sequoia Insurance, Menlo Park, CA.

I'd like more information on solutions for my business. Please send me a copy of the *Omnis Business Directory* for the limited time price of $4 (regularly $7).

☐ I've enclosed a check for $4
☐ Please charge $4 to my credit card:

VISA _____ Mastercard _____

Charge Account # _____ Expiration Date _____

Signature _____

Name _____

Company/Title _____

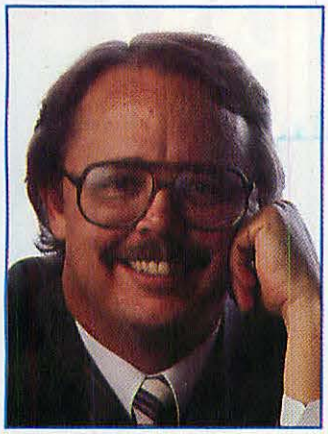
Address _____

City _____ State ___ Zip _____

Phone (___) _____

Send to: Blyth Software, Inc., 2929 Campus Drive, Suite 425, San Mateo, CA 94403.
OR CALL 800-843-8615 (Inside CA call 800-223-8050)

David Bunnell



12 Who Made a Difference in 1986

The first annual Personal Computer Achievement Awards honor 12 of the year's best and brightest PC players

This is the time of year when a lot of magazines announce their awards. Most of the time the recipients are chosen by the editors of those magazines. And most awards go to companies and products. *PC World* has its annual World Class PC awards, which are based on a poll of readers. (Winners of the 1986 awards were announced in the October issue.)

This year, *Macworld* will also present World Class awards based on a readers' poll.

We feel that readers' polls are especially meaningful because they are the voice of the consumer computing in the wilderness. Such a contest is a hands-on revelation.

However, the temptation for an editor-in-chief to make awards selections—to play at being omnipotent and all-knowing—is not one I can easily resist. Frankly, it's too much fun to pass up.

So I have decided to establish the Personal Computer Achievement Awards for 12 people who have made a significant difference to computing during the past year.

In making these awards I have relied on my own instincts, as well as on nominations that I received from the editors of *PC World, Macworld,* and *Publish!* magazines. There are other, more systematic ways of selecting winners, but ultimately the process is arbitrary.

(continues)



John Sculley
Apple Computer



John Warnock
Adobe Systems



Paul Brainerd
Aldus Corporation



Burrell Smith
Radius



Jean-Louis Gassée
Apple Computer



Bill Gates
Microsoft Corporation



Gary Kildall
KnowledgeSet Corporation



Rod Canion
Compaq Computer



Michael Dell
PC's Limited



Kevin Jenkins
Hercules Computer Technology

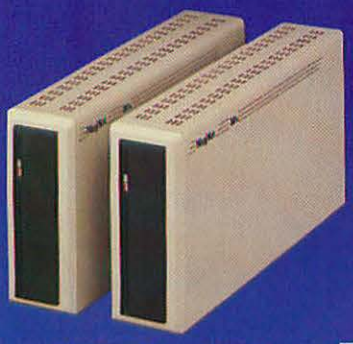


Dan Bricklin
Software Garden



Trip Hawkins
Electronic Arts

DRIVEN BY



MagNet 20X and 30X

The MagNet 20X was one of the first 20 meg SCSI drives available for the Mac Plus, and has proven to be one of the most reliable and popular drives sold. The 20X is reliable because it was designed to run cooler, as much as 30% cooler than drives without a fan. Heat burns the delicate components of your drive and the hotter the drive the shorter the life. The 20X is fast because of our efficient software and clean design. Nibble Mac magazine found out of nine contenders the 20X to be the fastest drive tested. Quality is tested for at every stage of manufacturing and our technicians personally sign off at each step onto a Quality and Assurance report that is included with every Mirror drive.

The MagNet 30X is the perfect choice for the users who feel their storage needs will grow. Priced at $1195.00 the MagNet 30X gives you 50% more storage than our competitors' higher priced 20 meg drives. Both the 20X and the 30X come with backup utilities and optional MacServe networking software (a $250.00 value).

The Tape Drive The Library Of Congress Chose

The Magnum Tape 20 was the tape drive chosen by the Library of Congress and two of the world's largest accounting firms, Arthur Andersen and Peat Marwick, to back up their Macintosh computers. These groups understand the importance of data integrity and quality: they chose the Magnum Tape 20.

The Magnum Tape 20 was the first tape drive introduced for the Macintosh and since the introduction a good product has only gotten better. Our free software update policy has allowed our users to improve their Tape 20 with features like multiple volume, file by file and incremental (last changes made) backup capabilities. The Tape 20 runs silent and cool to give you the worry-free performance you need.



Magnum Tape 20

Great Warranty, Stellar Service.

Mirror Technologies has always striven to be the leader in the Macintosh storage market. In January of 1986 we were the first in the business to introduce a one year warranty. Customer service is a high priority and ours has gained a reputation for being second to none. We consistently get letters from people like W. D. Ball of Syracuse, NY, who wrote "The main reason I will continue to seek and purchase Mirror Technologies products is because of your service technicians and the quality of service and support I have received." It's satisfied customers like this that have given our customer service department its quality reputation.

The Original 800K Drive

Mirror Technologies was the first company to introduce an 800k drive for the Macintosh. (We even beat Apple.) Since then we have satisfied thousands of customers with the speed and value of the best built drive on the market. MacWorld magazine said the Magnum 800 "comes with several features the Apple drive lacks." Features like a one year warranty, and a push button manual eject in addition to the auto eject. The Magnum 800 is compatible with the Mac 128, 512, and Plus. Reading and writing 400k or 800k diskettes. Quiet, fast and priced far less than the Apple drive, the Magnum 800 is the perfect value for your Macintosh system.



Magnum 800

QUALITY



MagNet 40/40

Power, Performance And Security

The MagNet 40/40 hard drive with tape backup offers speed, dependability, multiuser software, plus peace of mind. Perfect for big applications like desktop publishing, CAD, CAM and financial modeling where large storage and data integrity are crucial. The MagNet 40/40 connects directly to your Mac Plus via the SCSI port or to your Mac 512k by adding our fastport. The 40/40 allows you to backup by volume, by individual file, or incrementally (last changes made). With the incremental capability you can backup most daily work in under four minutes. Every 40/40 includes MacServe™ networking software from InfoSphere to give you Multiuser, Multitasking and a host of other features. The MagNet 40/40 is the drive of choice for companies like GTE, Apple and Blyth Software (the developers of the powerful OMNIS database). These are just a few examples of users with large storage needs and crucial data.

Drive Forever



MagNet 85X and 172X

The MagNet 85X and 172X hard drives combine blistering speed and enormous capacity with tape backup and multiuser/multitasking software. Now an entire office of Macs can share data and peripherals for maximum performance and efficiency. Using voice coil technology these high capacity drives are three times faster than standard hard drives. The 3M 40 meg tape backup in the MagNet 85X and 172X give you peace of mind knowing your data is secure. The MagNet 85X and 172X are compact, quiet, and powerful alternatives to the AST 4000. The 172X has two times the drive capacity for the same price as the 4000 drive.* Coupled with our standard one year warranty and toll-free support, our "super drives" will satisfy your hunger for power no matter how big the appetite.

Good Companies Run With Mirror

We ship more Macintosh drives than anyone in the industry. (Except of course for our friends at Apple.) Because of this, Mirror Technologies has thousands of satisfied customers worldwide. Our corporate customers read like a roll call of the Fortune 2000. Companies like Honeywell, AT&T, 3M, RCA, Apple, GTE, Kodak, Motorola, and DuPont. We also include amongst our fans the nation's top research labs, places like Bell Labs, Cray Research (the developers of the world's most powerful supercomputers), Lawrence Livermore Labs, Rockwell Shuttle, NASA, and Control Data. Practically every major university in the United States uses Mirror drives, institutions like Harvard, MIT, Princeton, Cal Tech, Stanford, Duke, Dartmouth, Columbia, Cornell, and Yale.

Mirror Technologies drives also run on thousands of Macs for companies, and persons with aspirations to be great, companies like Don's Dog Service, Anderson's Nursery, Ads Up Inc. and even Australian Himalayan Expeditions Inc. Small companies with an eye to getting big. Why do we have so many satisfied customers? We believe that it is because of the commitment to quality and service that is included with every Mirror drive shipped.



MIRROR TECHNOLOGIES Inc.

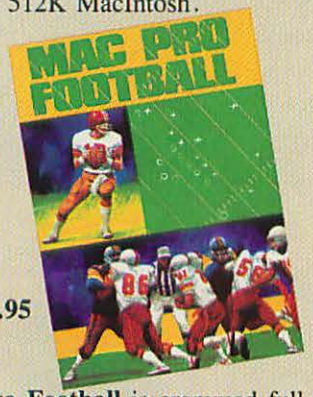
2209 Phelps Road, Hugo, Minnesota 55038
612-426-3276

Circle 406 on reader service card

AST 4000 is a trademark of AST Research Inc. Macintosh is a trademark of Apple Computer Inc.
*Based on November 1986 suggested retail pricing.

Down...
Ready...
Set...
Hut...Hut!

Take 40 Super Bowl teams, add a billion play combinations, throw in the ability to set a game at any point and create your own weather, top it off with an accurate system of recording plays and stats, and you have **MacPro Football**, the first team sports game created exclusively for the 512K MacIntosh.



$49.95

MacPro Football is crammed full of features and those details missing from other games: the opening coin toss, draw-your-own pass plays, four quarterback plays, zone and man-to-man defenses, and a computer coach as good as Lombardi! Whether you're a Sunday coach or a Monday morning quarterback, **MacPro Football** is the ticket to football excitement!
Watch for future disks with more famous teams, complete seasons, and programs to create your own teams and save stats!



AVAILABLE EVERYWHERE or call toll-free: 1(800)638-9292. Ask for Operator M

microcomputer games DIVISION

The Avalon Hill Game Company

A MONARCH AVALON INC. COMPANY
4517 Harford Road • Baltimore, MD 21214

Circle 581 on reader service card

David Bunnell

One of the people on my list is John Sculley, chairman and CEO of Apple Computer. Sculley wins a Personal Computer Achievement Award for leadership.

In 1986 he successfully brought Apple back to the forefront of personal computing. Apple not only launched the Mac Plus, and virtually created a new market with desktop publishing, but the company also turned in record quarterly earnings and once again became the darling of Wall Street. All this at a time when its main competition, IBM, was receiving a severe battering in the marketplace.

The next award goes to John Warnock, president of Adobe Systems. He is making PostScript the standard page-description language of most laser printers and thereby helping to spread the gospel of desktop publishing throughout the world. He wins the Bunnell Peace Prize this year.

Similarly, Paul Brainerd, president of Aldus Corporation, wins the Literature Prize for coining the term *desktop publishing* and for creating *PageMaker,* which became the *1-2-3* of 1986. *PageMaker* is the program that proved once and for all that the Macintosh can be a highly productive tool for creating documents, newsletters, and even magazines such as *Publish!*. Brainerd deserves a full page in the history book of personal computing.

Moving along in my personal awards ceremony, a plaque goes to Burrell Smith, vice president of engineering at Radius, for designing the Radius large-screen monitor for the Macintosh. To my mind, this was the most exciting hardware product of 1986. Smith wins Bunnell's CRT kudos for this second major hit: his first was helping to engineer the original hardware for the Macintosh.

Then we come to Jean-Louis Gassée, vice president of product development for Apple Computer. Jean-Louis receives an award for his vision of future personal computer development.

Thank goodness Jean-Louis has a vision, because Apple needs it. Sometimes his notions do not seem relevant to anything in particular, but the important thing is that he has a vision and that he expounds it so well.

Next I solemnly canonize Bill Gates, chairman of Microsoft Corporation, for championing CD ROM—for having the foresight to recognize the significance of this new information technology and for actively campaigning to make it happen. I also applaud him for steering the effort to take Microsoft public in what has probably been the most successful public offering in corporate history.

Gary Kildall, founder of Digital Research and president and founder of KnowledgeSet Corporation, makes the awards list for being the hands-on activist behind CD ROM and for creating many of the tools that make it all possible. He wins my Science Prize.

Another real winner is Rod Canion, president and CEO of Compaq Computer. I applaud him for his bold strike of announcing Compaq's amazing 386 machine before IBM's, and for successfully steering Compaq Computer through the difficult waters of the compatibles world.

Michael Dell, president of PC's Limited, wins my stamp of approval for pioneering the mail-order PC-clone and PC AT-clone business—and for proving that there can be other channels for delivering products besides computer stores and direct sales to large corporations.

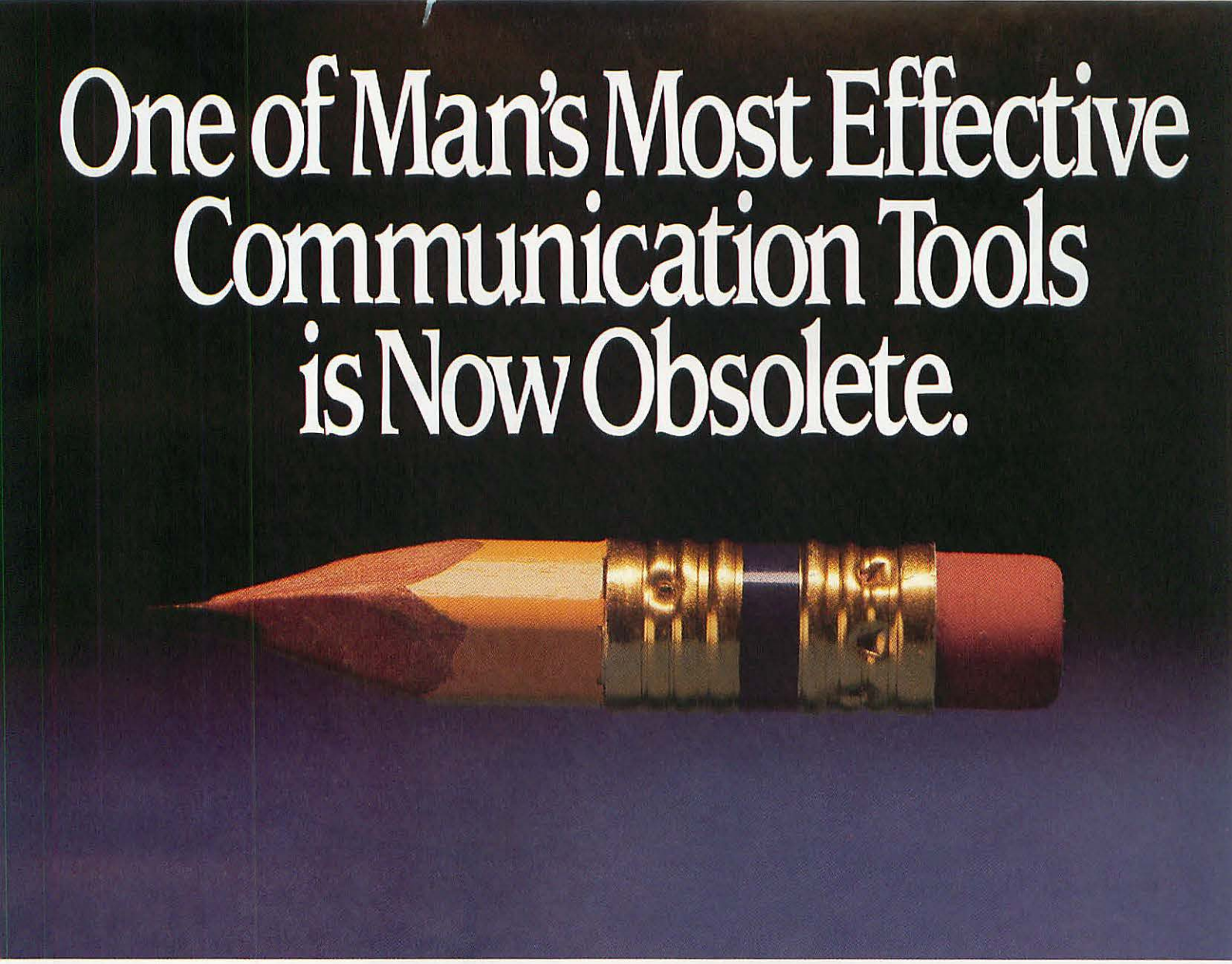
Kevin Jenkins, president of Hercules Computer Technology, wins for having established Hercules as the graphics standard on the PC and for promoting the RamFont text mode of the Hercules Graphics Card Plus.

Dan Bricklin, cocreator of *VisiCalc* and president of Software Garden, wins Best of Class with *Dan Bricklin's Demo Program.* In fact, Dan is his own best demo. He wins for bringing out his second big software hit and for proving that his true value to the industry is really the gray matter between his ears and not just his past achievements.

And finally there's Trip Hawkins, president of Electronic Arts. He scores for continuing to be wildly successful in the so-called nonexistent home computer market. Recently, Electronic Arts racked up four awards at the Software Publishers Association meeting in Washington, D.C.—for best creative product, best graphics, best sound

(continues)

One of Man's Most Effective Communication Tools is Now Obsolete.



Now There's a Easy Way to go from Idea to Outline in One Step!

Take the step, drop that blister-causing carbon tool called a pencil. Oh, it's still useful for some things, but not when it comes to organizing ideas and opinions into outlines. We respectfully submit a better way, an easier way, a way some would even call a miracle. *Voila!*™

Voila! **is a Desk Accessory Outliner** that provides you with all the third generation outlining features you've been waiting for . . . and then some.

With *Voila!* there is no limit to the number of Headlines, Subheads or Expander windows you may create. And you have the ability to edit fonts, sizes and styles for a single Headline, a Level, an entire Family or the entire Outline. These unprecedented editing features, combined with **Imagewriter** and **Laserwriter** compatibility, allow you to create Outlines of unsurpassed quality. *Voila!* will even print your Outlines in one of four formats: **Arabic, Roman, Standard** or **Symbol.** And on top of all this a **Table of Contents** is instantly created for each Outline.

Perhaps the most innovative feature of *Voila!* is the ability to automatically transform any word processing document into an Outline, in seconds. Business plans, proposals and manuscripts are converted into Outline format with the click of a mouse! And *Voila!* doesn't limit you to the written word. Both **text** and **graphics** may be included as a part of any Outline.

Voila! reads and writes both **ThinkTank**™ and **TEXT ONLY** files. It requires a Macintosh 512K or Macintosh Plus and is compatible with all hard disks. For further information, or for the name of the dealer nearest you, call Target Software toll free.



Voila! – Only **$99.95**
From the makers of MacLightning™

Target Software

14206 SW 136th Street, Miami, Florida 33186
National 1-800-622-5483; In Fla. (305) 252-0892

Circle 478 on reader service card


CONSTANT COMMITMENT
JAZZ
WORD PROC.
SPREAD SHEET
COMMUNICATIONS
DATA BASE
GRAPHICS

MORE THAN A SPREADSHEET!

CONTINUOUS INNOVATION

You do more than spreadsheet calculations. Jazz® does more than that, too. Five times more than that. More than any other single piece of software made for your Apple® Macintosh™ personal computer.

Five powerful functions—not just a smattering of this and that—but five functions deep enough to stand alone: spreadsheet, database, word processing, graphics and communications.

All five so thoroughly integrated that they work beautifully together through a unique Jazz feature called HotView.

With Jazz you can direct your attention to many projects—or many parts of the same project—without changing programs. With Jazz you can revise or update information in one document or several documents instantly. With Jazz you can work the way you work best.

All of which simply means this: you can be more productive, more effective—you can do more, with Jazz, than you can with any other piece of software.

Go ahead. Get a demonstration at a Lotus authorized dealer.

Your Macintosh is capable of doing a lot more than spreadsheets. For that matter, so are you.

Lotus Jazz

Business software for the Apple Macintosh integrating spreadsheet, graphics, word processing, database and communications.

© 1986 Lotus Development Corporation. Lotus and Jazz are registered trademarks of Lotus Development Corporation. Macintosh is a trademark of McIntosh Laboratory, Inc. and is used with expressed permission of its owner. Apple is a registered trademark of Apple Computer, Inc.

THE POWER DESK

JAZZ + MAC



COPY II MAC™

BACKS UP PROTECTED SOFTWARE.

Copy II Mac does more than just sector copy. Its bit copy program has the built-in power and flexibility to handle most protection schemes automatically and supports single and double-sided drives. (We update Copy II Mac as often as needed to handle new protections; you as a registered owner may update at any time for $15 plus $3 s/h.)

RUNS PROTECTED SOFTWARE FROM YOUR HARD DISK.

Copy II Mac makes using your hard disk (including the Apple hard disk-20) as convenient as it should be. No longer will you have to use the 3½" disk with some of the most popular business software. Call for current list.

GIVE YOUR MAC MORE MUSCLE.

Copy II Mac can even repair some damaged disks and recover accidentally deleted files.

System Requirements: Macintosh or Macintosh Plus, 1 drive. (2 drives, all available memory and hard disks fully supported.)

Call 503/244-5782, M—F, 8—5:00(West Coast time) with your VISA in hand. Or send a check for $39.95 U.S. plus $3 s/h, $8 overseas.

$39.95

Central Point Software

INCORPORATED
9700 S.W. Capitol Hwy., #100
Portland, OR 97219

Winner of A+ Readers' Choice Awards!

Backup utilities also available for the IBM, Apple II, Atari ST, and Commodore 64/128.

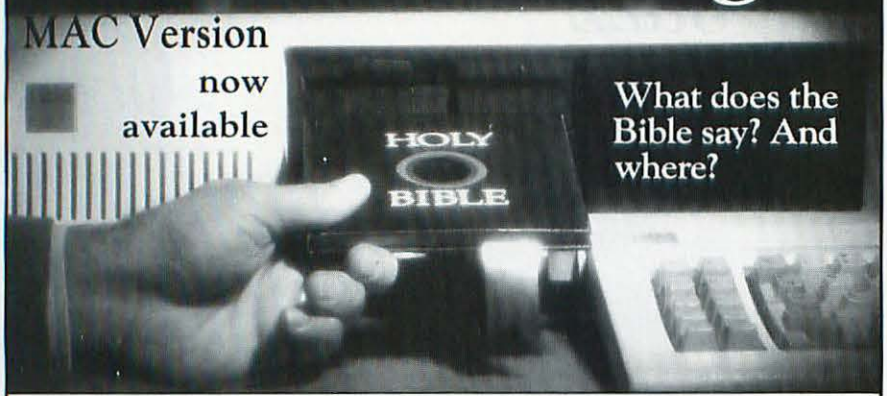
Now available!!!

800K drives for Macintosh: $195.00 (plus $10 shipping/handling). Plugs directly into Mac & Mac Plus!

Circle 175 on reader service card

Still Searching?

MAC Version now available



What does the Bible say? And where?

We offer an integrated family of software products that allow you to search the Bible as never before.

With "THE WORD Processor" software (which includes the complete text of the KJV or NIV Bible) you can create indexes on key words, phrases, even concepts, as well as search, display or print, for just $199.95. Greek and Hebrew Transliterator products which include Strong's Concordance are also available. Or choose from a host of other exciting Biblical software products available in varying price ranges.

So if you're still searching, give us a call. We're anxious to show you how your PC can help you access your Bible as never before.

Include $3.00 for postage and handling. For Apple, IBM PC, Commodore 64, TRS80, MacIntosh, CPM 2.2, MS-DOS.

BIBLE RESEARCH SYSTEMS

2013 Wells Branch Parkway, Suite 304
Austin, Texas 78728 **(512) 251-7541**

Circle 578 on reader service card

effects in music, and best computer adaptation from the original. Trip is certainly one of the brightest minds in the industry.

These are the winners of the first annual Personal Computer Achievement Awards.

Now, as I read the tea leaves, flip through the tarot deck, and gaze into the crystal ball, who are some of the people to watch in 1987?

Here are a few of my hunches:

Jonathan Sachs, cofounder of Lotus Development and creator of *1-2-3*. Will his *Manuscript* word processing program for Lotus be a major hit like *1-2-3?*

C. Wayne Ratliff, chief scientist of Migent and creator of *dBase*. Wayne's bold move from Ashton-Tate almost earned him a place on the top 12 list for 1986. This year, we'll see if he can come up with a hot data manager that will make his former creation obsolete.

Philippe Kahn, president of Borland. Expect Philippe to gain wide recognition for introducing a truly revolutionary and astonishing new program. Even though he's had good programs like *SideKick* and *Turbo Lightning*, his fame has come about largely because he created a new, low-cost software marketing approach. Now Philippe is going to soar to new heights of software success.

Andy Hertzfeld. Andy nearly made my 1986 list of winners because of his involvement with Burrell Smith at Radius. Andy is the software genius who created *Switcher* for Apple Computer, and he's a man from whom you can always expect the unexpected. There may be some pleasant surprises from him this year.

Next, but not least, there's Steve Jobs. Because he's Steve Jobs, and he's still a major force to be reckoned with. For that we should all be "insanely grateful."

I'd like to see all the players have a great year ahead because I believe that overall, 1987 is going to be so fantastic that it will cover any mistakes we might have made.

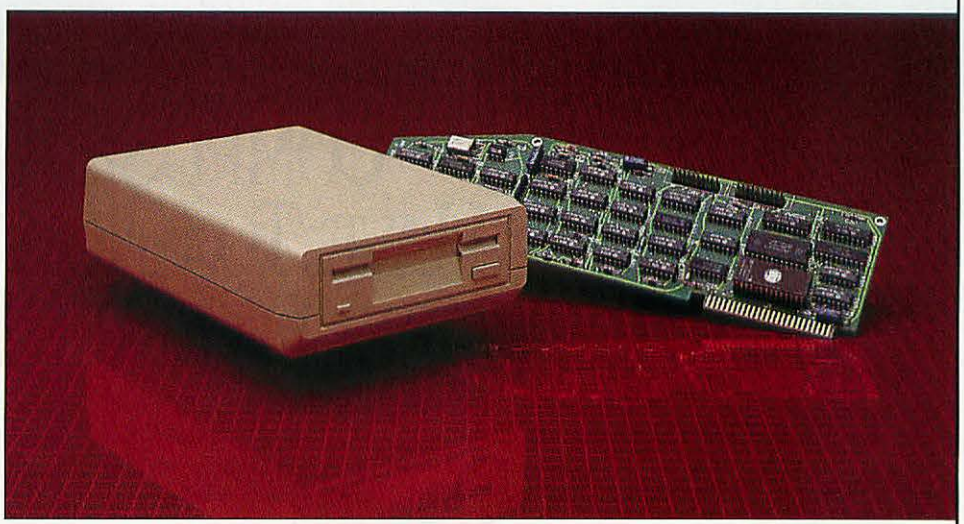
See you at next year's Personal Computer Achievement Awards. And remember, I'd love to hear from you. I'm open to nominations. □

3.5 Inch, 800K Drives

Only $195

Compatible with IIGS, //e, Macintosh and Laser 128!

Now you can add 800K of Apple compatible storage to your Apple at an affordable price. These 3.5 inch drives are functionally identical to Apple's Unidisk 3.5 and Macintosh drives but cost half as much!



Works with an Apple II:

Our 3.5 inch drives connect to an Apple //e, Apple II Plus, Apple IIGS, or Laser 128 via our "Universal Disk Controller." This remarkable interface card allows you to connect two 3.5 inch drives for a total of 1.6 megabytes of Apple Unidisk 3.5 compatible disk storage.

Ideal Drives for IIGS

These are the ideal drives for Apple's new IIGS. Save over $300 on a two-drive combination! If you're upgrading from an Apple II Plus or //e, you can even connect your current 5¼ inch drive without needing adapter cables. (Our Universal Disk Controller supports both 20 pin and DB-19 drive connectors.)

Works with a Macintosh:

These 3.5 inch drives directly connect to a Macintosh Plus or Macintosh 512 enhanced computer through the external drive port. No interface card is necessary.

Available Now!

Call today and order your 3.5 inch disk drives. Find out just how inexpensive it can be to add an 800K disk to your Apple!

Central Point Software INCORPORATED

9700 SW Capitol Highway, #100
Portland, OR 97219
(503) 244-5782

☐ Yes, please send me the 3.5 inch 800K drives indicated below:

☐ **800K, 3.5 inch drive** for Mac Plus, Macintosh 512 enhanced, Apple II Plus, //e, IIGS, or Laser 128. (Sorry, not available for //c). $195 & $10 s/h ($15 to Canada, $50 overseas)

☐ **Universal Disk Controller card.** (Required to connect 800K drives to Apple II Plus, //e, IIGS, and Laser 128.) Controls 2 3.5 inch drives. Price includes our popular Copy II Plus disk utilities - free! $90

And ship them to me at this street address ASAP:

Name _____

Address _____

_____

_____

Daytime phone #(____) _____

To Order By Mail:
Simply send in this order form with a check, or provide your Visa/MC

#_____

and expiration date_____

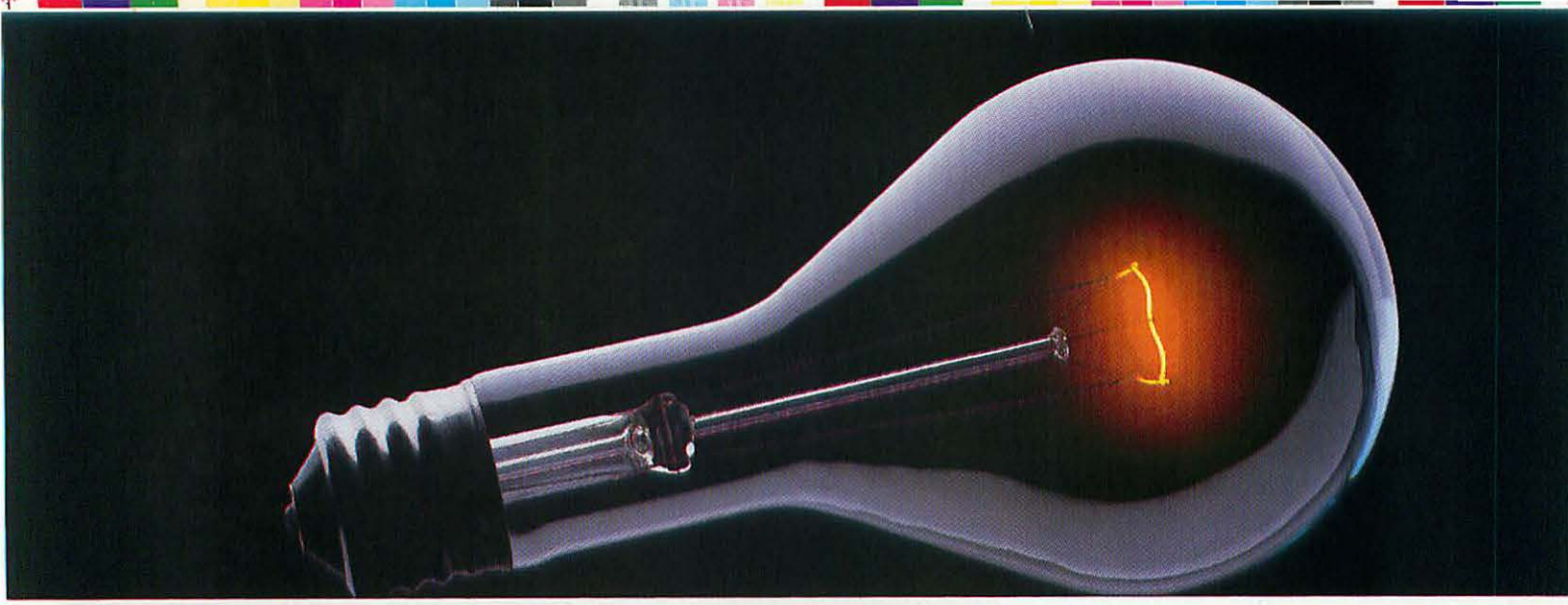
issuing bank_____

To Order By Phone:
Just call us at **503/244-5782** 8-5 (West Coast time), M-F, with your MasterCard VISA in hand!

Central Point Software INCORPORATED

9700 SW Capitol Hwy., #100
Portland, OR 97219

Circle 607 on reader service card



COMPUSERVE.
YOU DON'T HAVE TO KNOW HOW IT WORKS TO APPRECIATE ALL IT CAN DO.

You don't have to know about hardware. You don't have to know about software. All you have to know is that CompuServe is a computer information service. You subscribe to it. And in return, you have access to an incredible amount of information, entertainment, communications and services right at your fingertips.



Here are a few of the hundreds of things you can do with CompuServe.

COMMUNICATE

Even beginners can compose, edit, send and file messages the first time they go online with CompuServe's **EasyPlex™ Electronic Mail.** Friends, relatives and business associates—anywhere in the country—can stay in constant, convenient touch.

CB Simulator features 72 channels for "talking" with thousands of other subscribers throughout the country and Canada. The chatter is frequently hilarious, the "handles" unforgettable and the friendships hard and fast.

More than 100 CompuServe Forums welcome your participation in discussions on all sorts of topics. There are Forums for gourmet cooks, golfers, musicians, pilots, sailors and more, all designed to show you how easy and fun it can be to get the most out of your computer.

If you want to learn more about your computer system, CompuServe's at your service. Our **Users Forums** cater to specific computer makes and models, and offer information and expertise on many different types of machines. You'll find electronic editions of popular computer periodicals. You can even find free software.

And if you need answers to software questions, seek out a **Software Forum.** You can often find solutions quickly and easily online.

Bulletin Boards let you post messages where thousands will see them. Use our National Bulletin Board or the specialized bulletin boards found in almost every Forum.

HAVE FUN

You'll find all sorts of sports and entertainment trivia games, plus brain-teasing educational games. You can go it alone or compete against players from all over the country. Test your wits in the only online TV-style game show with real prizes. Then, when you're ready, go for the ultimate in excitement and get into one of our interactive space adventures.

CompuServe's **movie reviews** keep that big night at the movies from being a five-star mistake. **Soap opera updates** keep you up on all the latest turmoils and tragedies on your favorite daytime dramas.

For leisure-time reading and relaxing, look into the electronic editions of some of your favorite magazines, including OMNI On-Line.

SHOP

CompuServe's **ELECTRONIC MALL™** lets you take a coast-to-coast shopping spree without ever leaving home. It's an exciting and easy way to shop online, buying name-brand goods and services from nationally known merchants.

SAVE ON TRIPS

CompuServe's travel services let you control your own travel arrangements through the convenience of your personal computer. Scan flight availabilities on almost any airline worldwide. Find airfare bargains, then book your own flight online.



With CompuServe you've got direct and connecting schedules for national and international flights. Plus complete listings of over 28,000 hotels around the world.

MAKE PHI BETA KAPPA

When you run out of the answers at homework time, it's time to turn to CompuServe for the complete set of continuously updated encyclopedias that doesn't take up an extra inch of shelf space.



The College Board, operated by the College Entrance Examination Board, gives tips on preparing for the SAT, choosing a college and getting financial aid.

KEEP HEALTHY

HealthNet will never replace a real, live doctor—but it is an excellent and readily available source of health and medical information.

On a more personal note, **Human Sexuality** offers information on a variety of topics concerning this very important aspect of human behavior. Hundreds turn to it for honest, intelligent and candid answers.

BE INFORMED

CompuServe puts all of the latest news at your fingertips. Our sources include the AP news wire (covering all 50 states, plus national news), the *Washington Post*, the *St. Louis Post-Dispatch*, specialized business and trade publications and more.



Find out instantly what Congress did today, who finally won the game and what's happening back in Oskaloosa, with the touch of a button. And, our executive news service lets you tell us what to watch for. We'll electronically find, "clip" and file news for you...to read whenever you'd like.

INVEST WISELY

Our comprehensive investment help just might tell you more about the stock you're looking at than the Chairman of the Board already knows. (Don't know who the chairman is? Chances are, we can fill you in on that, too.)



CompuServe gives you complete statistics on over 10,000 NYSE, AMEX and OTC securities. Historic trading statistics on over 90,000 stocks, bonds, funds, issues and options. Five years of daily commodity quotes. Standard & Poor's. Value Line. And more than a dozen other investment tools.

SUPERSITE facilitates business decisions by providing you with demographic and sales potential information by state, county and zip code for the entire country.

The national business wire provides continuously updated news and press releases on hundreds of companies worldwide.

GET SPECIALIZED INFORMATION

Pilots can get personalized flight plans, weather briefings, weather and radar maps, etc. Entrepreneurs use CompuServe too for complete step-by-step guidelines on how to incorporate the IBM s of tomorrow. Lawyers, doctors, engineers, military veterans and businessmen of all types use similar specialized CompuServe resources pertinent to their unique needs.

So much for so little.

CompuServe makes the most out of any computer, and all you pay is a low, one-time cost for a Subscription Kit (suggested retail price $39.95). Usage rates for standard online time (when CompuServe is most active) are just 10¢ a minute.



In most major metropolitan areas you can go online with a local phone call. Plus, you'll receive a **$25.00 Introductory Usage Credit** with the purchase of your CompuServe Subscription Kit.

So easy the whole family can go online.

CompuServe is "menu-driven," so beginners can simply read the menus (lists of options) that appear on their screens and then type in their selections. Experts can skip the menus and just type in GO followed by the abbreviation for whatever topic they're after.

If you ever get lost or confused, just type in H for help, and we'll immediately cut in with instructions that should save the day. Plus, you can always ask questions online through our feedback service or phone our Customer Service Department.

Here's how to subscribe.

To access CompuServe, you need a computer, a modem (to connect your computer to your phone) and, in some cases, some simple communications software.



Now you're ready to order your CompuServe Subscription Kit.

For your low, one-time subscription fee, you'll receive:

- a complete, easy-to-understand, 170-page spiral-bound Users Guide
- your exclusive preliminary password
- a subscription to CompuServe's monthly magazine, *Online Today*

All this, plus:

- a $25.00 usage credit!

To order your Subscription Kit or to receive more information, call **800-848-8199** (in Ohio, 614-457-0802).



CompuServe Subscription Kits are also available in computer stores, electronic equipment outlets and household catalogs. You can also subscribe with materials you'll find packed with many computers and modems sold today.

CompuServe. You don't have to know how it works to appreciate all it can do—for you.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220

An H&R Block Company

EasyPlex and ELECTRONIC MALL are trademarks of CompuServe, Incorporated.

Circle 330 on reader service card

MindWrite™ The P
With Integr

Now there's MindWrite, the new standard in Macintosh word processing that liberates you to write the way you think.

Works The Way You Do

MindWrite is a powerful word processor with totally integrated outlining that lets you write the way you think. Because now you can outline while you write. Write while you outline. Jump back and forth between topics and text, move easily around your document, put ideas on hold, change your mind, or advance to new thoughts without losing your concentration. Or your patience.

Organizes Creativity

MindWrite makes it easier to organize your thoughts on paper. You can now spend more time being creative and less time word processing. Arrange and rearrange text intuitively without awkward organizational problems. You'll see your work flow smoothly from concept to final document.

Gives You Total Control

What you see is what you get (WYSIWYG) through MindWrite's powerful, flexible and easy-to-use integrated operation. Display multiple views of the

Word processing and outlining features are totally integrated and always available — in every window, in every document.

MindWrite's multi-level rulers (one shown) make it easier to create complex documents.

Pick up and move text with the hand cursor — easier than cut and paste. And renumbering is automatic.

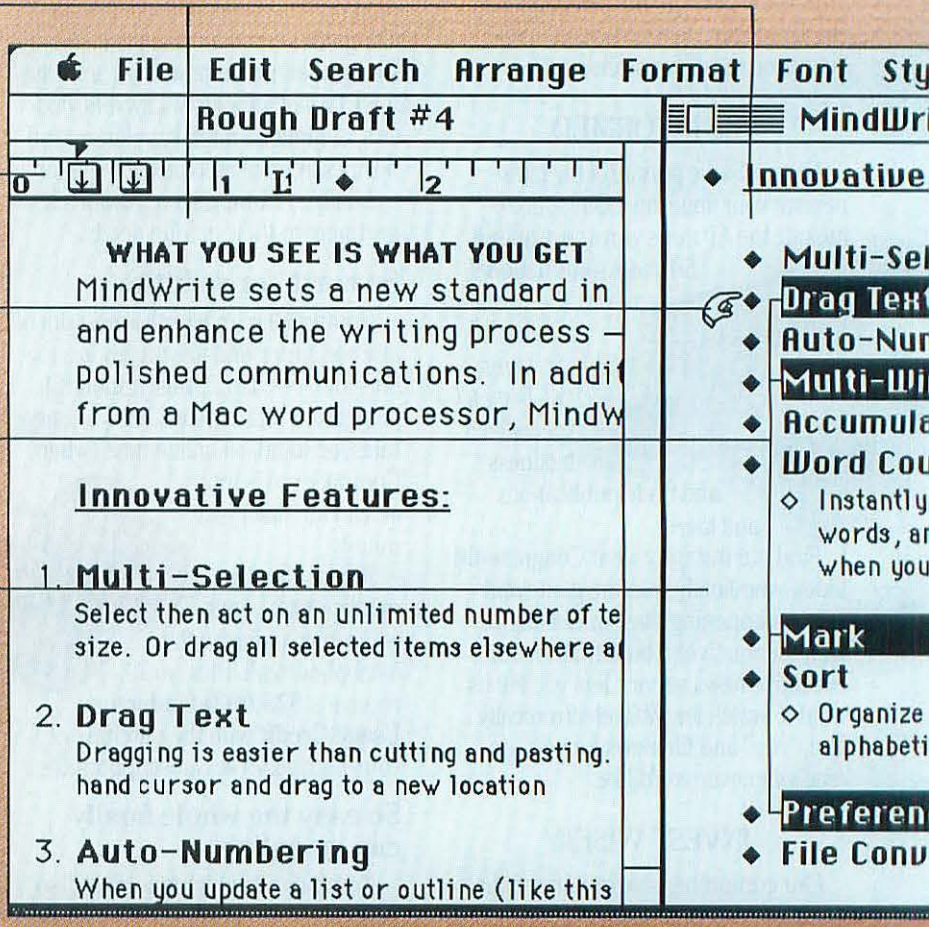
Multi-Selection lets you act on many headings and/or paragraphs simultaneously. Change font or style, move, copy, etc.

Collapse or expand outlines to any level of detail. To reorder, drag with hand cursor. Renumbering is automatic — on screen and in print.

Reads/writes MacWrite files and reads Think Tank files.

Click zoom buttons to resize windows instantly. Convenient "Windows" menu activates hidden windows.

Display a collapsed outline in one window with detail expanded in another.



30-Day Money Back Guarantee. If within 30 days of purchase you find that this product does not perform in accordance with our claims, call our customer service department and we will gladly arrange a refund.

MindWrite works with Mac 512K, Mac Plus, ImageWriter I & II, LaserWriter & LaserWriter Plus.

ver Word Processor
ed Outlining.

same document, automatically number headings, collapse and expand text, sort lists, import graphics, change fonts and style, and rearrange text easier than ever before.

You'll find that MindWrite far surpasses other word processors in helping you to not only better organize your written communications, but do it in less time as well. And if you already know MacWrite, you can start using MindWrite right away.

Retail Price $125.

MindWrite

New Standard In Word Processing

MindWork Software
P.O. Box 222280
Carmel, CA 93922 (408) 625-2720

What You See Is What You Get

MindWrite sets a new standard in word processing. It's designed to facilitate and enhance the writing process — to help you creatively organize ideas into polished communications. MindWrite can save you time and help you write more effectively — whether you're dashing off a memo or letter, creating an ad campaign, or laboring over a book or detailed technical specifications. Organize your rough ideas into polished prose with MindWrite — you no longer need to buy one expensive software program for word processing and another for outlining.

In addition to the standard features you expect from a Mac word processor, MindWrite offers many innovations. Here are just a few:

1. Multi-Selection
Select then act on an unlimited number of text segments, adjacent or not. C... style, or point size. Or drag all selected items elsewhere and see them instantly reord... you chose them.

2. Drag Text
Dragging is easier than cutting and pasting. Pick up any number of headi... the hand cursor and drag to a new location.

3. Auto-Numbering
When you update a list or outline (like this one), or even rearrange entire s... document, MindWrite instantly renumbers for you — on screen and ...

4. Multi-Windows
The number of document windows you can dis... memory. Convenient window management too... working with many windows easy.

5. Accumulating Clipboard
All your cut and copied text is accumulated in the ... extensive Undo feature to protect you from most mis...

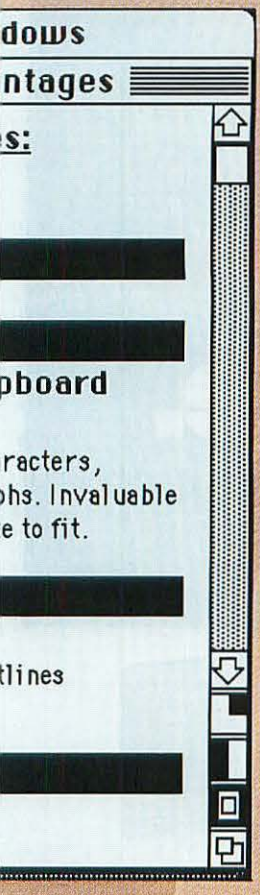
6. Word Count
Instantly counts characters, words, and paragraphs. In...

7. Mark
Identifies paragraphs that have been revised within a u... easily find and review recent changes to your document.

8. Sort
Organize lists or outlines alphabetically.

9. Preference
Customize MindWrite to fit your personal needs with preference sets you create and... default font and size for new documents, enable/disable Quick key short... autonumbering, show/hide rulers and pagination, choose search op... or ruler.

10. File Conversion
No need to start over. MindW... can save MindWrite ... as PageM...





Order Today

Please send _____ copies of MindWrite at $125 each. Include $3 handling/shipping for each copy (in the continental U.S.). Calif. residents please add 6% sales tax.

To order today, use this coupon or call our Toll Free number: **800/367-4334** and, California only **800/654-5599** with your credit card number.

☐ VISA ☐ MasterCard ☐ Check ☐ Money Order

Card Number _____ Expires _____

Signature _____

Name _____

Address _____

City/State/Zip _____

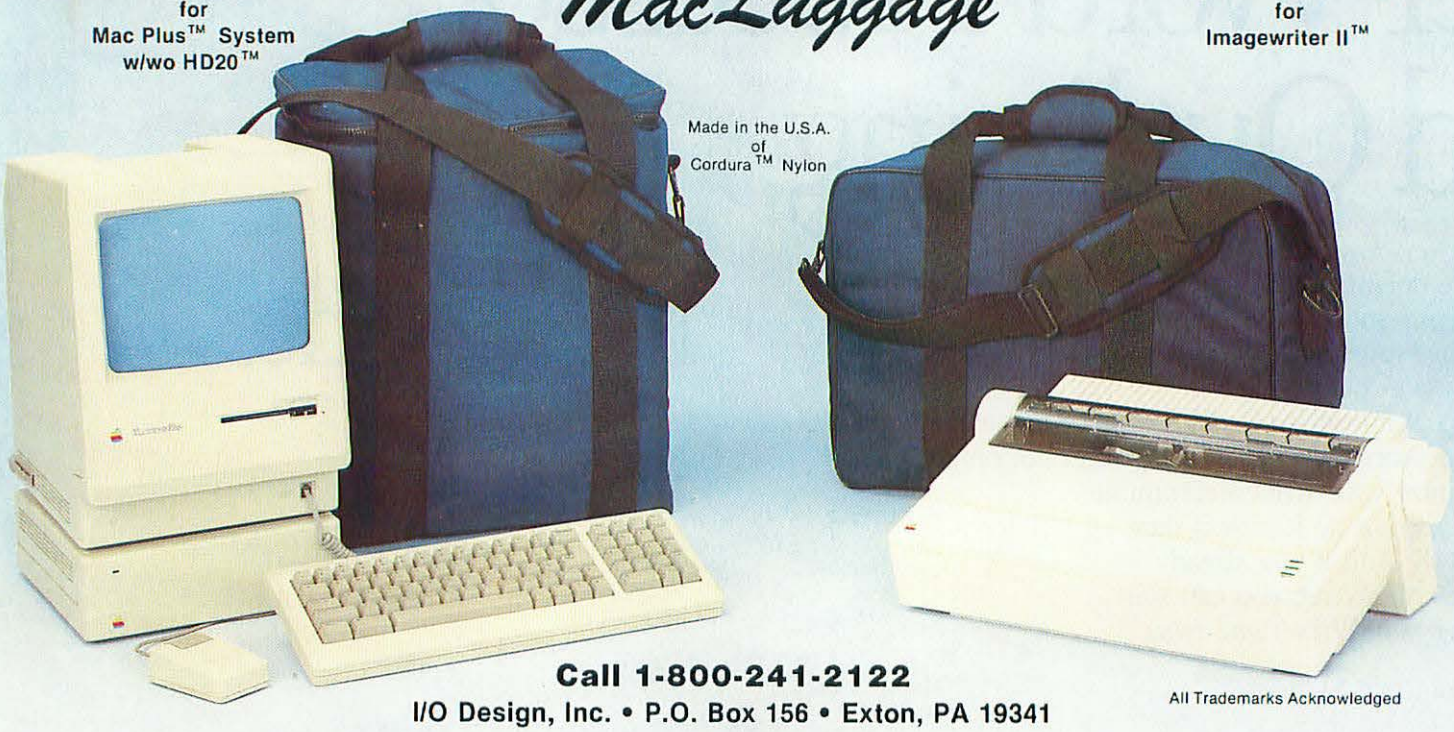
Dealer Inquiries Invited. Call For Details.

Macinware Plus™ · $99.95
for
Mac Plus™ System
w/wo HD20™

MacLuggage

Imageware II™ $89.95
for
Imagewriter II™

Made in the U.S.A.
of
Cordura™ Nylon



Call 1-800-241-2122
I/O Design, Inc. • P.O. Box 156 • Exton, PA 19341

All Trademarks Acknowledged

Circle 530 on reader service card
See Us at Macworld Expo Booth #711



The MacGolf™ Challenge.

Sit down, boot up and find yourself surrounded by the sights and sounds of the fairway – with MacGolf, the premier simulation golf game for Macintosh™ users.

MacGolf challenges beginners and experts with 3-dimensional animated golfers and graphics, realistic (digitized) sound effects, and two 18 hole golf courses. Up to four people can play.

MacGolf works on a 512K or Macintosh Plus and costs only $59.95. Get MacGolf at your nearest dealer today. Or call Practical Computer Applications at (612) 427-4789.

MacGolf™

Macintosh is a trademark licensed to Apple Computers, Inc. MacGolf is a trademark of Practical Computer Applications, Inc.



Circle 211 on reader service card



MARRIAGE OF CONVENIENCE

PC MacBridge weds Macintoshes and IBM PCs for a complete office network

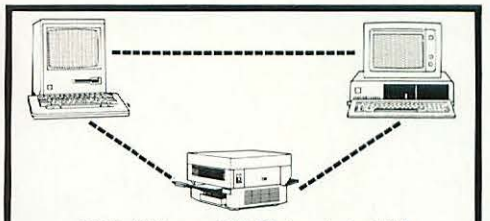
For too long, Macintoshes and PCs have been feuding like the Hatfields and McCoys, unwilling to even acknowledge each other's existence. But now, with PC MacBridge as matchmaker, the two are brought together in a network where they can love, cherish, and share files and printers with each other.

All in the family

PC MacBridge Plus is a family of products that enable Macintoshes and IBM PCs to share information and peripherals within an AppleTalk network. PC MacBridge Plus includes a PC half-card with network software. Also included are LaserScript/Plus, LaserGraph and MailBox software. LaserScript/Plus and LaserGraph allow an IBM PC to use the LaserWriter or other PostScript printer while MailBox transfers files around an AppleTalk network.

Invite the relatives

The PC MacBridge family tree also includes PC MacServe,* which permits hard disk sharing by both IBM PCs and Macs within a network. PC MacTxt allows you to transform PC files into Mac files and vice versa. And PC MacSpool frees computers for other tasks during any print job.



PC MacBridge puts IBM PCs into the AppleTalk network for a lasting engagement.

PCs and Macs—The perfect couple

PC MacBridge is all you need to let your IBM PCs and Macintoshes establish a lasting marriage. Use PC MacBridge with any AppleTalk product, including Hayes' InterBridge. Ask your local dealer for PC MacBridge, or call (404) 662-0366 today.

TANGENT TECHNOLOGIES

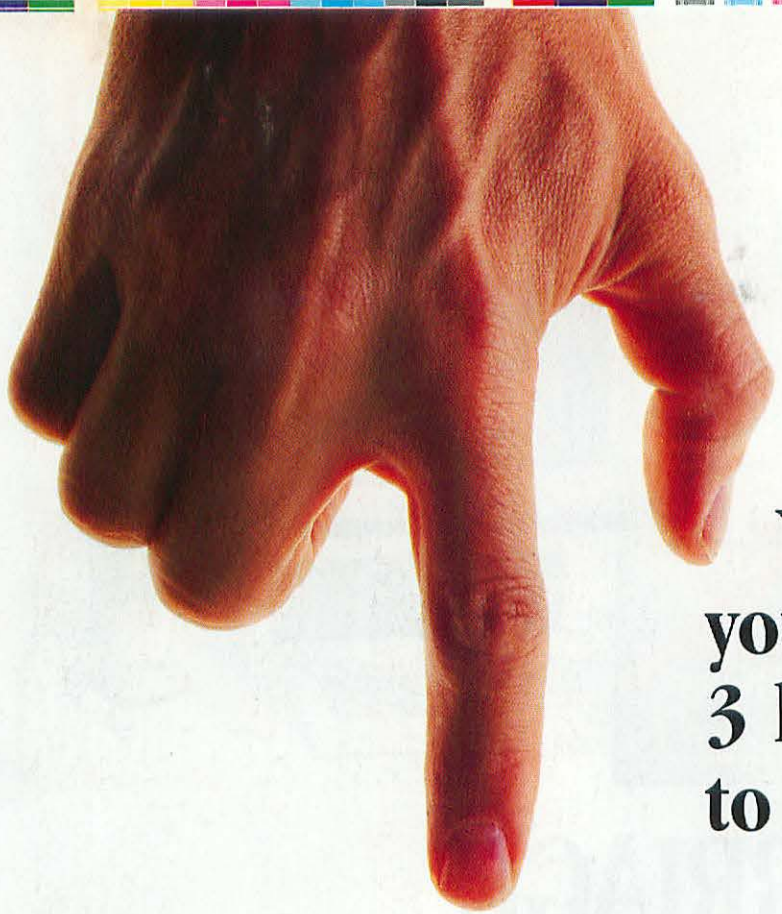
5720 Peachtree Parkway • Suite 100 • Dept. MW01 • Norcross, GA 30092 • (404) 662-0366
In Canada, call MCKENZIE BROWN LTD (416) 593-6880 • For Europe, call TRADE VENTURES (703) 435-3800

*Works in conjunction with MacServe from Infosphere

Apple, AppleTalk and LaserWriter are trademarks of and Macintosh is a trademark licensed to Apple Computer Inc. IBM is a trademark of International Business Machines Corp. InterBridge is a trademark of Hayes Microcomputer Products.

See Us At Macworld Booth #1627

Circle 461 on reader service card



You've put your finger on 3 key reasons to subscribe . . .

1 **SAVE OVER $23 A YEAR!** Your subscription means a handsome savings for you—almost 50% off the cover price.

2 **GET THE MOST FROM YOUR MAC!** Your money-saving subscription also insures a steady flow of the practical information you want—reviews of software and hardware you can rely on, new applications, techniques, and practical "how-to" tutorials.

3 **GET THE MACWORLD GUARANTEE!** We're so certain you'll get what you need—and more—from MACWORLD, we guarantee it! If for any reason you're not satisfied with MACWORLD, just let us know, and we'll promptly refund the cost of your subscription for every unmailed issue.

MACWORLD

The Macintosh™ Magazine

Save

$23.40
off the
~~$47.40~~
cover price

Order Now to Take Advantage of These Special Savings.

Call TOLL FREE: 800/524-3200

Visa and MasterCard Accepted!

SUBSCRIBE NOW

YES! Please send me one year (12 monthly issues) of *Macworld* for only $24. I'll save $23.40 off the annual cover price of $47.40, a savings of almost 50%. (That's $6 off the regular subscription rate of $30.)

SAVE EVEN MORE!
☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

Name

Company

Address

City, State, Zip

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires June 30, 1987.

4BB91

MACWORLD
The Macintosh™ Magazine

SUBSCRIBE NOW

☐ **YES!** Please send me one year (12 monthly issues) of *Macworld* for only $24. I'll save $23.40 off the annual cover price of $47.40, a savings of almost 50%. (That's $6 off the regular subscription rate of $30.)

SAVE EVEN MORE!
☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

Name

Company

Address

City, State, Zip

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires June 30, 1987.

4BB91

MACWORLD
The Macintosh™ Magazine

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666

LOOKING FOR A GREAT IDEA?

Brainstorm™

THE LAST MEMORY UPGRADE YOUR MAC WILL EVER NEED

Finally, the unprecedented power of an open architecture Mac. The ultimate Mac enhancement, now made possible by second generation memory technology, Brainstorm is the 1, 2, and 4 meg memory upgrade for your 128K or 512K Mac. Brainstorm, multi-meg power for your Macintosh.

Productivity Plus

Revolutionize your productivity with Brainstorm. Run all your favorite applications on a RAM disk up to ten times faster. Create your own integrated software and work with muliple applications simultaneously. Free yourself from disk swaps and needless restrictions on document size. Achieve full performance from high-flying software like Excel, Jazz, or PageMaker. Brainstorm, versatile power for your Macintosh.

Total Compatibility

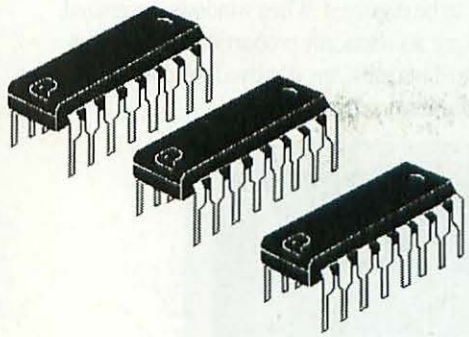
Brainstorm is accomodating. It runs 128K, 512K and Mac Plus software. With no awkward boot-up disk. Brainstorm is extraordinarily tiny. So it even fits beneath HyperDrive, unlike any other multi-meg upgrade. The built-in ROM Enhancer™ allows you to switch back to 512K at the click of a mouse. And Brainstorm works with all Apple ROMs and the new 800K drive. Brainstorm, universal power for your Macintosh.

A Real PowerSaver

Brainstorm's innovative design incorporates a custom PowerSaver chip. This allows the two meg, for instance, to run cooler than a 128K. Less heat and no overloading of your power supply. And without a noisy fan. Brainstorm, safe power for your Macintosh.

Power Within Reach

State of the art manufacturing allows Mac Doctor to deliver Brainstorm at absurdly low prices. $379 for 1 meg from 512K, or $428 from 128K, for example. Fully installed and ready to perform, with a one year warranty, optional Performance Software, and a readable user's guide. Brainstorm, value for your Macintosh.



... AND SOME MORE GREAT IDEAS

The Mac Doctor 512

An industry standard 512K upgrade with a built-in future. Upgrade later to a BrainStorm and get an $89 discount. Gold sockets are standard as well as a complete 120 day warranty. Compatible with all Mac software and with internal hard disks. Performance Software included free **$169**

20 Meg Internal Drive

Imagine having 20,000K available on your disk. Convert your Mac into a power work station with this superfast name brand internal 20. 800K external also available.

Mac Doctoring

Mac sick? Mac Doctor is the digital service specialist. Component level repair at honest prices. Many common problems repaired for under $50. Call for estimates.

- **For information call (415) 964-2131**
- **Ask about our No Down-time Service**

Mac Doctor Electronics

1145 Terra Bella Ave • Mountain View, CA 94043 • (415) 964-2131

Trademarks: Macintosh, Mac Plus, Apple, of Apple Computer, Inc; Excel of Microsoft Corp.; Jazz of Lotus Development Corp.; PageMaker of Aldus Corp.; HyperDrive of General Computer, Inc.; BrainStorm, PowerSaver, Rom Enhancer of Mac Doctor Electronics

Circle 395 on reader service card

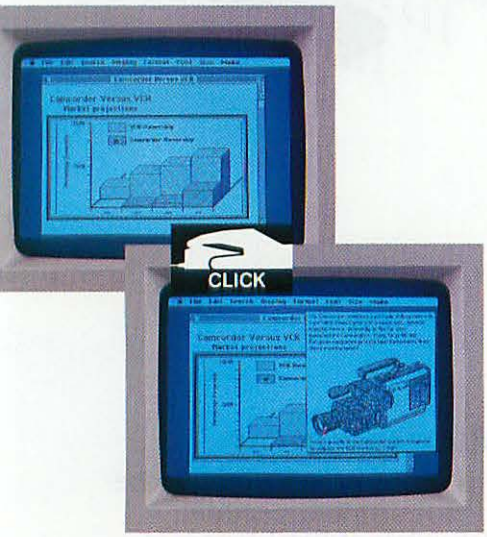
Guide takes the hype out of Hypertext

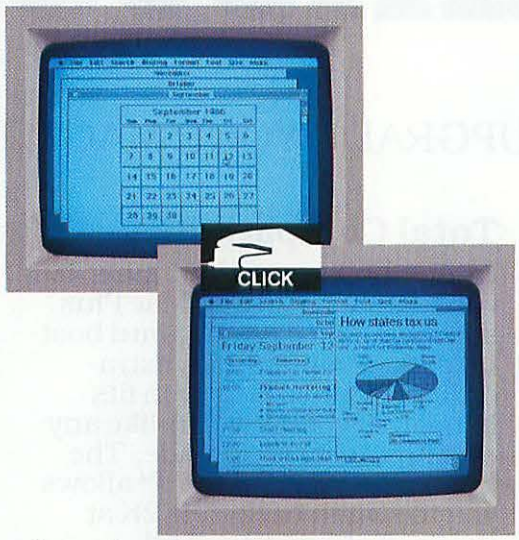
Guide is the first hypertext system designed specifically for the Macintosh. Now you can direct the power of the Mac with the most innovative principles of hypermedia for your personal information management.

Move through information at the speed of thought.

Guide provides virtually limitless flexibility in storing, retrieving and assembling electronic information. Unlike outline processors that force you to structure information according to a rigid format, Guide allows you to flow naturally through stored text.

Rather than emulating a printed page, Guide is designed to take advantage of the computer screen by allowing any number of windows containing graphics and text to be displayed. When windows are resized, graphics are automatically proportioned and text is reformatted instantly. Any displayed window can be activated and worked from.





Information management that's as flexible as you are.

A click of the mouse at any user-defined point in a body of text and a more comprehensive level is created on the screen for storage or retrieval of information, cross references and notes. If your Guide document cross references another document, Guide automatically opens a new window for it. Guide lets you tailor your information system to suit you...not some programmer.

With Guide you can...

- build a scheduling calendar with whatever level of detail you require. Cross reference meetings with relevant documents. Click on any date and see your agenda for that day along with other pertinent information.
- create a graphics Guideline with MacDraw or MacPaint. Click on different parts of your graphic and create new levels of information or open other documents containing cross-referenced information.

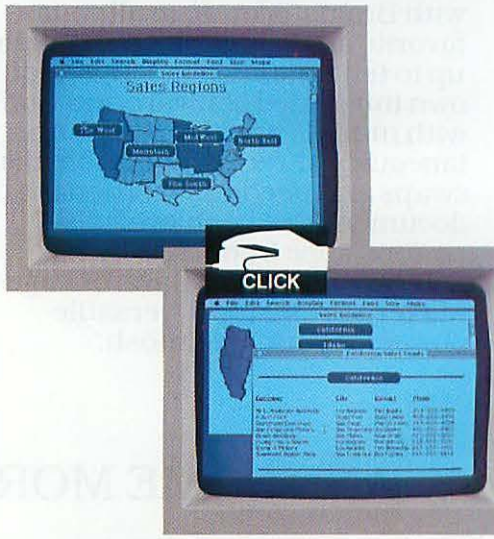
Use Guide for product specifications, research reports, personal information, legal documents, technical documents, electronic correspondence and a lot more.

Enhancement for desktop communications.

Guide brings a new dimension to desktop communications. Use Guide to create any type of electronic document for desktop publishing, electronic mail, creative writing, researching, etc. Guide supports MacWrite, MacPaint and MacDraw. You can print anything that can be configured on your scree

Easy to learn...easy to use...easy to buy.

Guide is a program that you can learn while you use Four cursor patterns and six screen devices are all you nee to know. It is 100% Mac honest. You can start using Guide immediately for your information management.



You can put Guide to work for only $134.95 (includ Guide examples disk, mini-Guide desk accessory and complete documentation).



OWL
International, Inc.
14218 NE 21st Street
Bellevue, WA 98007
(206) 451-2286

Yes, I want to do more with my Macintosh!

Please send me _____ copies of Guide at $134.95.

Total amount: _____

Payment by: ☐ VISA ☐ MC ☐ AMEX ☐ Enclosed Check

Card Number _____ Exp. Date _____

Name _____

Address _____ Phone _____

City _____ State _____ Zip _____

To Order: 206-747-3203

To place an order, call 206-747-3203 or enclose a check with this coupon. Please add $2.50 for shipping within the U.S. Mail to OWL International, Inc., 14218 NE 21st Street, Bellevue, WA 98007

Foreign orders add $10. Washington State residents please add appropriate sales tax.

Circle 547 on reader service card.

Letters

A forum for Macworld readers



Academic Debate
I have no idea what Blake Lee Spahr is complaining about in his September letter when he writes that neither *MacWrite* nor *Microsoft Word* is adequate for preparing scholarly papers or books. Having completed a 375-page book manuscript and numerous papers in my first year as a Macintosh owner, I couldn't be happier about the performance of *MacWrite*.

On the other hand, I strongly endorse David Bunnell's criticism of documentation and other customer support. When I try to find something through a manual's index, too often my search ends in total frustration. And a lot of the commercially published guides turn out to be either arrogant or cloyingly cute in style.

Gerhard Rosegger
Case Western Reserve University
Cleveland, Ohio

Word Processing in the Ivory Tower
While I agree with Blake Lee Spahr [*Macworld, Letters,* September 1986] that word processors for the Mac are not yet sophisticated enough, I disagree with the notion that programmers and marketing people already know what we want. We must ask for what we need so that they can focus their limited time and money in those areas.

For example, *Word* does not allow automatic footnote numbering if the same citation must be referred to again in the paper. The necessity for this capability in our area of scientific writing makes the entire footnote facility useless for our work. Others who publish in the same journals have the same problem. In addition, negative numbers (such as −0.2) are treated as if they were hyphenated words and might be broken at the end of a line. I have written the company with my suggestions. If we make specific comments to the publishers, the ball is in their court; if they respond, they will have more sales and we will have better programs.

Peter Mahowald
Stanford Electronics Labs
Stanford University, California

Keep an eye out for the new version of Microsoft Word *and other new options for word processing. Somebody out there is listening.—Ed.*

A Tip along the Way
Steve Brecker's *Waystation,* reviewed in "Gems from the Public Domain" in your August 1986 issue, is a dynamite program for quick access to applications and utilities, especially on a hard disk. Here's a trick that makes it even handier: duplicate *Waystation* two or three times and give each copy a new name. Then have each copy call the others; that way you can have many more than 27 applications in this Finder substitute.

Ken Moore
Spring, Texas

Macworld from A to Z
When I bought my Mac in April 1985, I was so impressed with *Macworld* that I ordered all the back issues. Now that I have a complete set, how about a really comprehensive index? Even better, make it available on disk as an *Excel* or *OverVue* file.

Howard Replogle
Concord, California

Great idea. We'll look into it. For now, though, you can find items from back issues in the annual index, published in this issue and in January of each year to date.—Ed.

In Praise of Support
Living Videotext's support should serve as an example for the industry. If every software publisher had such knowledgeable people at the other end of the phone and a disk-replacement policy that allows users to hold onto their original until receiving the new disk, piracy would be a minor problem.

Terrence M. Walsh
Chicago, Illinois

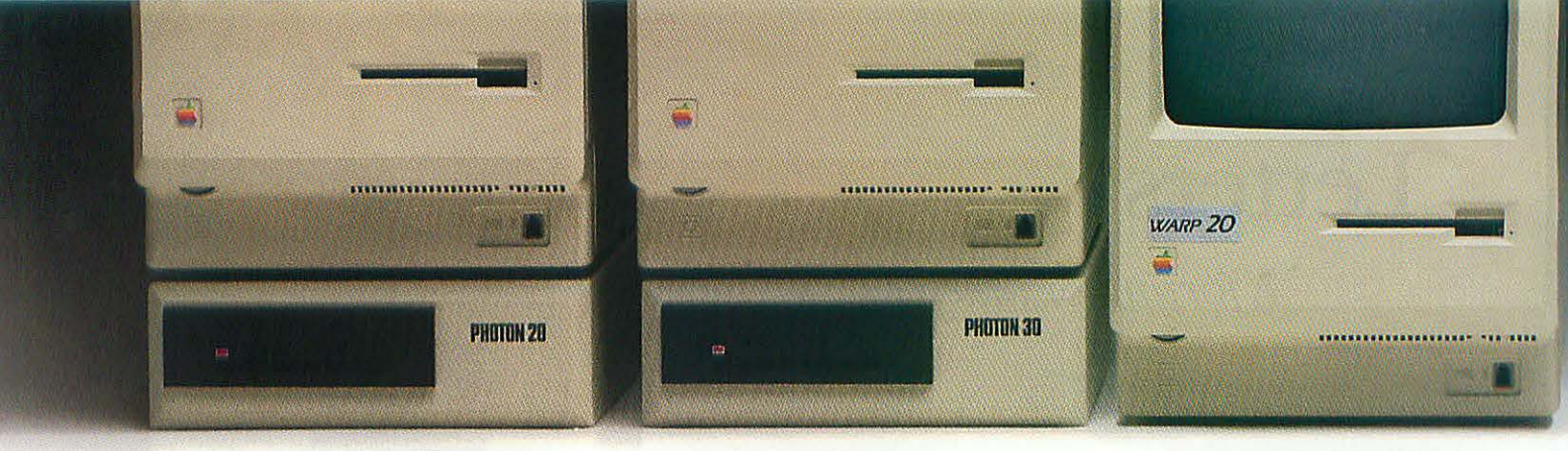
Proficient LaserWriting
I tried the suggestion in the September *Macworld*'s "Proficient Pagemaking" for printing a bleed page on the LaserWriter, but some details were missing from the instructions.

The LaserWriter does not automatically create a ¾-inch border; the default border depends on the paper size you use. When you take a letter-size document formatted to fit within an 8-inch width and try to print it on legal-size paper, the edges of the document are cut off.

Abby Mintz
San Jose, California

See "Insights on the LaserWriter" in this issue for more tips.—Ed.

(continues)



RUN THE PHOTON 20
20 Mb External Hard Drive

$595.00

RUN THE PHOTON 30
30 Mb External Hard Drive

$795.00

RUN THE WARP 20
20 Mb Internal Hard Drive

$795.00

Take The Mo

How Quality Can Be Inexpensive.

Warp Nine Engineering is a manufacturer of quality Macintosh products. We sell these products directly to you. We do not sell through computer stores. This means our prices are generally 40% less than computer retailers.

If you don't feel it's necessary to pay the dealer's premium prices, take a closer look at us.

Quality. Reliability. Ease Of Use.

We know quality is important to you, therefore, it is even more important to us. Every Warp product includes our Quality and Assurance Report detailing each step of production and testing and signed by the person in charge of that step.

Avoid hard drives that run hot. The hotter the drive, the shorter the life. Because we use a special fan, our drives are cool, quiet, and reliable. Good fans are expensive, and some drive manufacturers do not use a fan. Ultimately, they run a higher risk of failure. Although it costs a little more to produce, we know that a cooler drive lasts a lot longer.

Each of our drives comes preformatted. This means your drive runs right from the box. Just plug it in and you're working in minutes.

Better Support Than A Dealer.

With every Warp Nine product, you also get a toll free Macintosh expert. We are referring to our technical support team. Each member has been hand picked and trained to give you the answers you need. If you have been frustrated by poorly trained dealer support, our technical experts will win a warm place in your heart.

The Photon 20.

A 21Mb external SCSI hard drive. Store as much information as fifty-two 400K floppy disks. HFS and MFS compatible. Supports all your Macintosh software. Can daisy chain up to seven SCSI devises. MacPlus version. **$595.00**
***512K** with our PlusPort. **$745.00**

The Photon 30.

Our 31Mb external SCSI hard drive. Faster access and 50% more storage capacity than a 20Mb. Stores as much as 9300 double-spaced pages. Best of all, the Photon 30 is priced less than you'd pay for nearly every 20Mb drive on the market. MacPlus version. **$795.00**
***512K** with our PlusPort. **$945.00**

The Warp 20.

A 21Mb internal SCSI hard drive for the MacPlus or 512K. The quiet, powerful cooling fan helps insure optimal operation. Our intelligent design and step-by-step manual make installation very straightforward regardless of your technical expertise. MacPlus version. **$849.00**
***512K** with internal PlusPort. **$795.00**

The Phaser 800.

Whisper-quiet 800K double sided disk drive. Compatible with 128K, 512K, MacPlus and HFS. No hardware or software modifications necessary. Dis-

	Photon 20	Photon 30	Low Down	Data Frame	Apple HD20 SC	Hyperdrive FX-20	Warp 20	Hyperdrive 20
Fan	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Avg. Seek Time	65	58	65	65	65	65	65	66-85
SCSI Compatible	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HFS Compatible	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal/ External	External	External	External	External	External	External	Internal	Internal
Price	595.00	795.00	995.00	1095.00	1299.00	1195.00	795.00	1595.00

**PLUSPORT ADAPTER FOR YOUR MACINTOSH 512K.*

The Warp Nine PlusPort adapter puts a MacPlus type SCSI port on the back of your Mac 512K. It is included with each 512K price. This adapter allows you to connect our SCSI hard drive and tape back up to your 512K and transfer data at the high speed that the MacPlus does. No modifications. No soldering. Just Clip on. Very simple to install.



RUN THE PHASER 800
800K Floppy Disk Drive
$199.00

RUN THE TRANSPORTER 20
20 Mb Tape Back Up
$795.00

RUN THE PHOTON 2001
20 Mb Hard Drive/20 Mb Tape Back Up
$1495.00

ney And Run.

tinguishes 400K and 800K diskettes and will read and write to them accordingly. Features push button and automatic electronic ejection. Cable included. All models. **$199.00**

The Transporter 20.

A 20Mb SCSI tape drive. Back up and restore the valuable data from your hard drive onto cassette tapes. Ensures safekeeping of all your applications and data, (both text and graphics). Features volume, file-by-file, and incremental back up. With the incremental feature, back up daily files in as little as three minutes. MacPlus version. **$795.00**
***512K** with our PlusPort. **$945.00**

The Photon 2001.

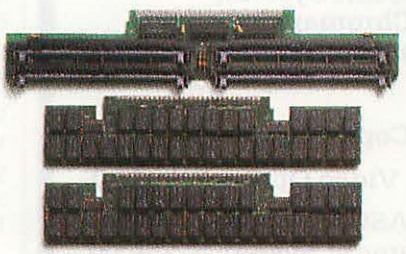
A 21Mb SCSI hard drive and a 20Mb tape back up in one convenient unit. Store data on the hard drive then back it up onto your tape. Will back up a full 20Mb of data in under twelve minutes or changes in your files in as little as three minutes. Priced over $1,000 less than the AST 2000. MacPlus version. **$1495.00**
***512K** with our PlusPort. **$1645.00**

Introducing Our New Software Products.

The Fullback—Called the best back up program for the Mac. Backs up text and graphics from your hard drive to floppy disks very quickly. Volume back up (everything), file-by-file and incremental (last changes). **$39.95**

Print Sprint—A print spooler. Allows you to work on your Macintosh while your Imagewriter is printing. **$29.95**

Special Bundle Price—Buy any Warp product and get both **The Fullback** and **Print Sprint** on one disk. **$39.95**



Two New Memory Upgrades For The MacPlus.

Simply clip on with no modifications necessary. Both the **DataRam** and **MonsterRam** are fully compatible with all your software. Both come with our internal piezo electric fan.
DataRam-2Mb upgrade. Expandable to 4Mb. **$299.00**
MonsterRam-2.5Mb upgrade for a MacPlus with an internal hard drive. **$545.00**

WarpCare Warranty.

All Warp Nine products are covered by a 90 day factory warranty. If at any time your drive fails while under warranty, simply call us, return it and we will send you a brand new unit immediately. A full one year warranty is available for all Warp products. Ask us about it.

30 Days To Love It.

We are so confident that you will love your Warp Nine drive, we will give you 30 days to use it. If at the end of that time you don't think it's a great buy, call us and send it back for a full refund.

Easy To Order. Fast Delivery.

Call us toll free. We'll be happy to answer any questions you may have. **1-800-328-6795 ext. 433,** or **1-800-654-5294.** In Minnesota call collect **612-426-9769.**

We accept Visa, MasterCard or C.O.D. orders. All Warp Nine products are shipped UPS two day air to insure immediate delivery.

WARP NINE ENGINEERING INC.

1751 W. County Road B. Suite 107,
St. Paul, Minnesota 55113

MasterCard VISA

Circle 439 on reader service card

Warp Nine, Warp 20, Photon 20, and Photon 30 are trademarks of Warp Nine Engineering Inc.; Macintosh and HD 20 SC are trademarks of Apple Computer, Inc.; Hyperdrive is a trademark of General Computer Corp.; LowDown 20 is a trademark of LowDown; DataFrame is a trademark of SuperMac.

A Christmas gift?
MAC INKER™

Re-ink any Fabric Ribbon **automatically for less than 5 cents.**

MAC INKER IM (Imagewriter ½)	**$42.00**
Universal Cartridge or Spool MAC INKER (specify)	**$68.50**
Multicolored MAC INKER (re-inks 4 color Imagewriter cartridges)	**$80.00**
Heat Transfer MAC INKER	**$70.00**



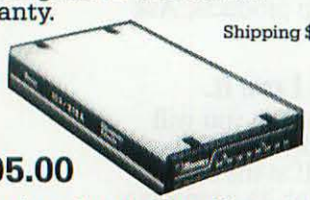
Shipping $3.00

■ Lubricated, Dot Matrix Ink extends print-head life, $3.00/bottle, available in black, brown, red, green, yellow, blue, purple, orange, gold and silver. ■ > 70,000 sold since 1982 (we are older than the MAC), > 8000 printers supported. ■ Imgwr. Cartridges top quality, life guaranteed, $7.00. Heat Transfer $9.00 (any color).

MERCURY MODEM

Really 100% Hayes* compatible ■ 300/1200 baud. Speaker. Front Panel Lights. ■ 24 months warranty.

Shipping $4.00



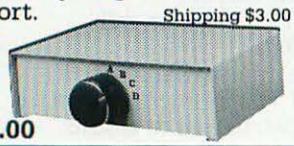
$205.00

*Hayes is a trademark of Hayes Microproducts.

DATA SWITCHES (any type)
MACINTOSH MULTIPORT SWITCH (9 pin), (or 8 pin for MacPlus). Connect up to 4 peripherals to your printer or modem port.

Shipping $3.00

$50.00



Mac-to-Switch **cable $15.00**

SUPERCHROMA™
Super Color for your MAC.

- **256 colors on screen** from a palette of 262,144 colors.
- **640 × 480** Resolution, greater than the Macintosh.
- Connects directly to the serial port. **No internal connections.**
- **If you know MacPaint™, you know Superchroma.** Paint directly on the Color Screen or load & color any MacPaint file or Macintosh screen. Any business, scientific application, artist drawing or graphic design can be enriched by superb color with the ease and friendliness you expect from the Mac... and
- **Print on the Imagewriter II** using a 4 color ribbon... or get the
- **Color Copier Option.** Print on paper or create immediately professional OVERHEAD COLOR transparencies ... or
- Connect to a **Film Recorder.** (i.e. Polaroid Palette).
- With the **Enhanced Video Option,** digitize, manipulate and color **video images in real time!!!...**
- Use any standard camera (NTSC, PAL), VCR, large-screen projectors, etc. This is just a fraction of what you can do with Superchroma. With the new color software available, the proverbial sky is the only limit. **Beyond power, beyond belief, beyond expectation!**

SUPERCHROMA System, including Chromapaint™ Software, Monitor and Superchroma™ Color Engine $2995.00
+ shipping

Color Copier Option $4500.00

Enhanced Video Option $1995.00

RASCAL™ Color Development System $ 250.00

90 days warranty

Chromapaint and Rascal are Trademarks of the Reed College, Portland OR. The Reed College developed the new revolutionary RASCAL Color Language. Mac Paint is a Trademark of Apple.

Order Toll Free. Call or write for free brochure. **1-800-547-3303**
In Oregon 503-626-2291 (24 hour line)

We are and always will be your

Computer Friends®

14250 N.W. Science Park Drive, Portland, Oregon 97229 Telex 4949559

SPECIAL CHRISTMAS OFFER. Order any key item and get a 15% discount on any other item purchased at the same time.

Circle 271 on reader service card

Letters

Judge MacTerminal by Its Function

In article after article, *MacTerminal* draws harsh criticism ["Room for Improvement," July 1986]. Software should be judged by how well it solves the problem it was designed for, and *MacTerminal* emulates terminals very well. Even the prerelease version of *MacTerminal* could fully emulate the VT-100, enabling me to run DEC's powerful editor, EDT, while the early version of *Versaterm* and the last version of *Red Ryder* (6.0) could not. For many months *MacTerminal* was the only program suitable for my needs, and it still does some things better than any other program I've tried. Besides, the most user-friendly software in the world can't transform CompuServe into a Mac; once you log on it's still arcane CompuServe.

Phil Wilmarth
Berkeley, California

Another Emulator Heard From

The article "Mini and Mainframe Connections" in the July 1986 issue overlooked our *Mac2624,* which allows the Macintosh to emulate a Hewlett-Packard 2624 terminal. The *Mac2624* package includes an intelligent file-transfer facility, which allows you to convert text, graphics, and data files between HP and Mac applications and to back up files from the Mac to the host computer.

Denise M. Girard
Product Marketing Manager
Tymlabs Corporation
Austin, Texas

Credit Due Accounting Guide

I commend you for Steve Mann's first-rate "Accounting Software Buyer's Guide" in the September issue. The article was comprehensive and allowed me to review a wide variety of programs quickly and simply. Your work saved me time and effort and allowed me to get my new Mac Plus on line quickly.

William E. Mooz
Santa Monica, California

Take Another Look at Word Handler

The October 1986 review of *Word Handler* contained an error that is quite unfair to the program. The review states that *Word Handler* does not accept graphics. That is not so! Although you can't paste graphics in through the Clipboard as with most Mac programs, you can use a desk accessory such as T/Maker's *ClickOn Worksheet* to produce graphs that can be pasted

(continues)

W·O·R·D HANDLER

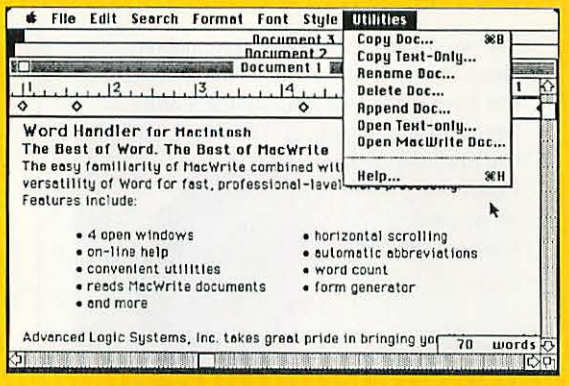
Word Processing for the Macintosh™

POWER

Word Handler™ is a powerful, full-function word processor for the 512K Mac and beyond.

- Open up to four documents simultaneously to cut and paste text between documents or refer to one document while you work on another.
- Full functioning Ruler supports paragraph indentation, margin changes and regular and decimal tabs.
- Fill-in feature for personalized form letters and documents.
- Change case of headings and titles without retyping text.
- Mirror-image printing for bound documents.
- Word Count lets you know how much you've typed.

The Best of Word™ The Best of MacWrite™ for only $79.95



Compare our features then compare our price. We're sure you'll agree that Word Handler is the best word-processing value available today.

EASE OF USE

Word Handler's pull-down menus and dialog boxes take full advantage of the user-friendly Macintosh environment.

- Horizontal scrolling makes it easy to view and edit a document larger than the window.
- Use the convenient Utilities menu (shown at left) for a quick and easy way to rename, delete, copy documents and more.
- Store frequently used words and phrases with Word Handler's Abbreviation facility to avoid repetitive typing.
- Open fully-formatted MacWrite documents.
- Advanced scrolling options.
- Help is always available at a touch of the mouse.

Special Trade-In Offer for MacWrite Owners:

For a limited time*, you can get Word Handler direct from ALS for the astoundingly low price of **$29.95!**

Just put your original MacWrite master disk in an envelope along with the coupon from this ad and your check for $29.95 and send it to Advanced Logic Systems, Attention: ALS Word Handler Offer.

You be the judge. If you don't agree that Word Handler is better than MacWrite, just send us a note within 30 days of purchase and we will send you a replacement MacWrite disk for a postage and handling fee of $25.

*Offer may be withdrawn at any time.

YES! Please send me Word Handler for the Macintosh.

☐ I want Word Handler but do not want to trade-in my MacWrite disk. Enclosed is $79.95.

☐ Enclosed is my original MacWrite disk and $29.95.

Name _____

Address _____

City, State, Zip _____

Daytime Phone _____

Circle one: MasterCard Visa American Express Check

Card No./exp. date _____

Send to: ALS Word Handler Offer, 1283 Reamwood, Sunnyvale, CA 94089. California residents add 7% sales tax. Please allow 3-6 weeks for delivery.

Advanced Logic Systems, Inc. • 1283 Reamwood Ave. • Sunnyvale, CA 94089 • (408) 747-1988

Word Handler is a trademark of Advanced Logic Systems, Inc.
Word is a trademark of Microsoft Corp. MacWrite and Macintosh are trademarks of Apple Computer, Inc.

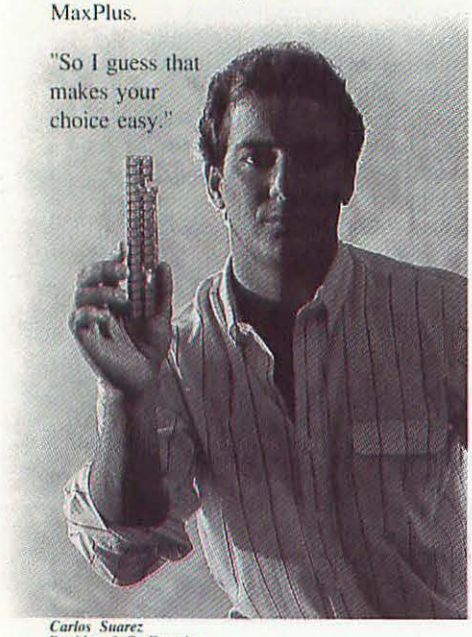
Circle 525 on reader service card

"Some choices are hard, some are easy.

"When we designed the MaxPlus™, we had a lot of hard choices to make. Engineering or economy. Just hardware or a complete system. Apple™ standard or not. We must have made the right choices, because the MaxPlus has become the best-selling Macintosh™ memory product ever.

"We decided to put our money into the same SIMM technology that Apple chose, so our boards would plug into the Macintosh Plus without modification — and still be expandable. With a two-year warranty. But hardware wasn't enough, so we included MaxRAM™ and MaxPrint™ RAM disk and print spooler software to put the memory to work. And we added the MaxChill™ piezo-electric fan, too, so the Macintosh Plus could actually be more reliable *with* the MaxPlus than without.

"The result is a complete system that will help you get your work done faster. Whether you use large memory-intensive programs, or need to run several programs fast, you'll be more productive with the MaxPlus.



Carlos Suarez
President & Co-Founder

MaxPlus by
MacMemory
The Macintosh Performance Family
473 Macara Ave.,Sunnyvale, CA 94086 •
(800)862-2636, (408)773-9922 in California

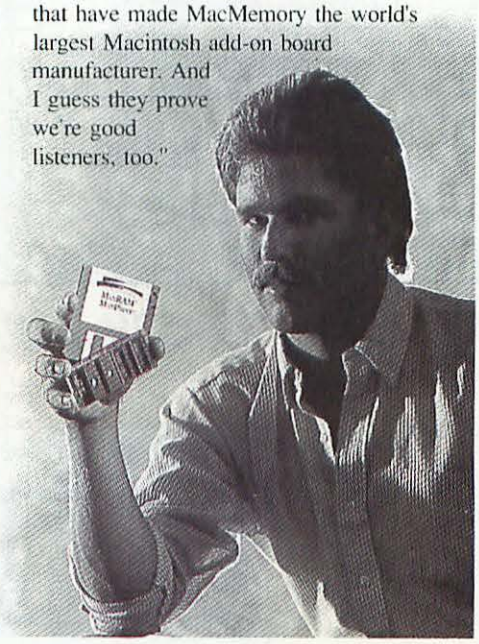
Apple is a trademark of and Macintosh is a trademark licensed to Apple Computer Inc.

"Our users tell us what we want to know. So we listen to them.

"Here's an example. Our MaxRAM™ and MaxPrint™ became the world's best-selling RAM disk and print spooler software, because they let users work 10 times faster than with a floppy and put an end to waiting for the ImageWriter. But RAM disks had a problem — one bomb and the data was gone. So when some people told us this was why they'd never use a RAM disk, we looked for a solution. Enter MaxSave™.

"MaxSave is the first and only internal recoverable RAM disk system for the Macintosh™ Plus.We combined hardware and software so our users could enjoy the speed without worrying about the crash. If and when the Macintosh bombs, they press reset and recover their data *intact*. Not bad for $119. And of course they get a full two-year warranty.

"So we wanted to pass that information along. After all, it's solutions like MaxSave that have made MacMemory the world's largest Macintosh add-on board manufacturer. And I guess they prove we're good listeners, too."



John Foley
Executive Vice President & Co-Founder

MaxSave by
MacMemory
The Macintosh Performance Family
473 Macara Ave.,Sunnyvale, CA 94086 •
(800)862-2636, (408)773-9922 in California

Apple is a trademark of and Macintosh is a trademark licensed to Apple Computer Inc.

into *Word Handler*. You can also paste *Excel* charts into the Scrapbook and then into *Word Handler*.

Word Handler also works with the Mac Plus's numeric keypad, unlike *Microsoft Word* version 1.05. That makes *Word Handler* much more convenient for people who work with lots of numbers, as I do. And the program is not copy protected.

I agree that there's a need to speed up the program, to improve the Undo command, and to allow ruler adjustments directly from the screen. For the money, however, *Word Handler* is an excellent word processing program.

Hugh Naylor, M.D.
Raton, New Mexico

Advanced Logic Systems has already issued an upgrade to its word processor. See Updates *in this issue for details.—Ed.*

Buy a Safety Net for Apple Hardware

My mouse lasted two and a half years before its little feet gave out. I had even started to wear down the bottom of the mouse itself. I took it to my local computer store and got the whole mouse replaced instantly—no wait, no cost. How? Easy: AppleCare.

AppleCare covers "ordinary wear and tear," certainly the cause of worn mouse feet. I highly recommend AppleCare coverage. I have had two logic boards, an internal drive, a keyboard, and a mouse replaced over the course of two years.

Brannen Taylor
Dumfries, Virginia

Wait in Line for a Power Supply Board

My 1½-year-old Mac has had two power supply boards and is now in need of its third. Locally, Apple dealers can't get enough boards to fix the Macs that fail. Due to the shortage, dealers here provide boards only if they do the installation—at $50 for a simple plug-in operation.

Avoid frustration; ask your dealer to disclose its parts policy before you buy.

Al Kruger
Sunnyvale, California

STELLA by Hindsight

Reese Jones did a good job of reviewing *STELLA* in the September issue, but there are a few points to clear up.

The review says the manual lacks an index and an overview of the program's features. The User's Guide does contain an overview in the form of an extended exam-

(continues)

Circle 337 on reader service card

"The Macintosh legacy has only just begun."

"You know, in the last two years, we've come up with a really impressive family of products for what was supposedly a closed machine."

"Right. And now Apple's coming out with an open architecture machine. The possibilities seem endless."

"I wish we could show people what we're developing right now."

"Now, not all our products are good looking. Take MaxChill™."

"Sure it's funny looking. But it's the best thing on the market for keeping the Macintosh™ cool. A cool Mac is a reliable Mac."

"And the best thing is that you don't even remember it's there. It's internal and it's quiet. You don't see it. You don't hear it."

"Remember how hard we worked on TheMax? It was our first memory product, and we wanted to make it right."

"Right. We even spent a lot of time deciding what color the resistors should be. But the engineering really stood out. Clean. Elegant."

"Don't forget reliable."

"We could have cut corners, I guess, but we were determined to produce the best possible product."

"We haven't changed that philosophy, either. The MaxPlus™ stands out in today's marketplace as a standard of fine engineering, fully compatible with Apple's standards."

"Sometimes the recommendations of our engineers are hard to take. They mean spending a little more time, a little more money. But in the long run, it's worth it."

"Then there's MaxPrint™ — a print spooler that works! No one could believe there *was* such a thing, let alone that we were *giving* it away with all our Max memory expansions."

"And you know, we're still doing that. But it has become so popular, we've made it available on its own. MaxPrint is selling bundled with MaxRAM™ — both programs for under $50.

"Maybe that's why it's the best-selling print spooler."

"Desktop publishing is a perfect example of the new generation of Macintosh applications that require more memory to really perform. With our memory products, it takes less time to complete a project."

"Actually, it's less *waiting* time — more *working* time."

"You can get a lot more accomplished."

"Customer support is easy when you have good products. It's easy, for instance, to offer a full two-year warranty on all our products. We've developed a philosophy of going out of our way to keep our customers happy."

"What it boils down to is that when you have a problem you want a solution."

"When we developed the MaxPlus, we knew we had the best 2Mb Macintosh Plus expansion possible."

"But we also knew that hardware was only part of the solution. So we made it into a whole hardware/software system. We included MaxRAM and MaxPrint software so the user could put that memory to work. And added the MaxChill."

"That means the Macintosh Plus could be more reliable *with* our product than without it."

"After all, what really matters here is performance."



MacMemory

The Macintosh Performance Family

473 Macara Ave.,Sunnyvale, CA 94086 • (800)862-2636, (408)773-9922 in California

Apple is a trademark of and Macintosh is a trademark licensed to Apple Computer Inc.

Circle 337 on reader service card.

FREE ★ FREE
Media-Mate 3
with purchase of any 100 diskettes (Boxed in tens)

SONY® 3½" SS/DD .... **1.19 Ea.**
3½" DS/DD .... **1.69 Ea.**
Boxed in tens — minimum order 20 (FREE Media-Mate 3 with each 100)

maxell® 3½" SS/DD ..... **1.15 Ea.**
3½" DS/DD ..... **1.69 Ea.**
Boxed in tens — minimum order 20 (FREE Media-Mate 3 with each 100)

BASF Or **Nashua** 3½" SS/DD ..... **1.09 Ea.**
3½" DS/DD ..... **1.59 Ea.**
Boxed in tens — minimum order 20 (FREE Media-Mate 3 with each 100)

MAC PAC's — *Boxed in 50's*

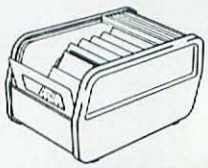
	50+	100+	400+
SONY 3½" SS/DD	1.15 ea	1.10 ea	1.05 ea
SONY 3½" DS/DD	1.55 ea	1.50 ea	1.45 ea
maxell 3½" SS/DD	1.15 ea	1.10 ea	1.05 ea
maxell 3½" DS/DD	1.55 ea	1.50 ea	1.45 ea
BASF or Nashua 3½" SS/DD	1.09 ea	1.05 ea	.99 ea
BASF or Nashua 3½" DS/DD	1.39 ea	1.35 ea	1.29 ea

MAC PAC's BOXED *in 50's* *Includes Labels*



Holds 30 3.5"
$8.95
With Lock
$10.95
MediaMate 3

Deluxe Roll-Top File



Holds 55 3.5"
$15.55
With Lock
$17.95

Mouse-Pad
$5.95
Red - Blue - Gray - Brown

New Supplier — Highest Quality



Imagewriter Ribbons
Black (2-5) **3.45** (6+) **2.95**
Color Packs **20.70**

Glare/Guard by OCLI
- Cuts 94% of Screen Glare
- Enhances Contrast
- Optically Coated Glass

$34.95

ORDER NOW **1 800 351-BEST (2378)**
1 800 451-BEST (in California)

Best COMPUTER SUPPLIES
2148-A Bering Drive
San Jose, CA 95131
(408) 435-3866

Visa, Mastercard, C.O.D. or Prepaid. Corporations rated 3A2 or better, government agencies and schools may send in purchase orders on a net 30 basis. Minimum order $25.00. Shipping charges are $3.00 per 100 diskettes (minimum shipping order $3.00) (within the continental U.S.), APO, FPO, AK, HI, PR and Canada Orders add 10% to cover PAL and Insurance. All other countries add 20%. C.O.D. Orders Add $4.00. No Sales Tax outside California.

Satisfaction guaranteed on all products.

Circle 373 on reader service card

ple and a description of each menu item. And it does have an index; it's possible the reviewer received a prerelease copy of the manual without an index.

Mr. Jones mentioned that the size of a model is limited, partly by available RAM. In fact, a *STELLA* model is limited *only* by the amount of available RAM. On a 512K Mac *STELLA* can accommodate approximately one thousand elements with any number of interconnections, which would not be a practical limit for most people.

Finally, many people who read the article probably thought you can't print what you see in the windows. While *STELLA* does not support the Clipboard, you can print the entire contents of any window to the ImageWriter or LaserWriter.

Peter Vescuso
High Performance Systems, Inc.
Lyme, New Hampshire

I Was a Teenage Maccer

I am 15 and have owned a Mac for more than a year. Many of my friends have Apple IIs and, with their nifty *Print Shop* programs, make attractive title pages for their school reports. My hand-drawn *MacPaint* cover wowed my geometry class and impressed my teacher. It also got me an A.

Whoever said that TV is the world's best babysitter sure hasn't used a Mac. It has kept my little charges fascinated for hours, thanks to great software like *31 Programs* from Brown Bag Software. I only wish there were more programs for children and teens who use Macs.

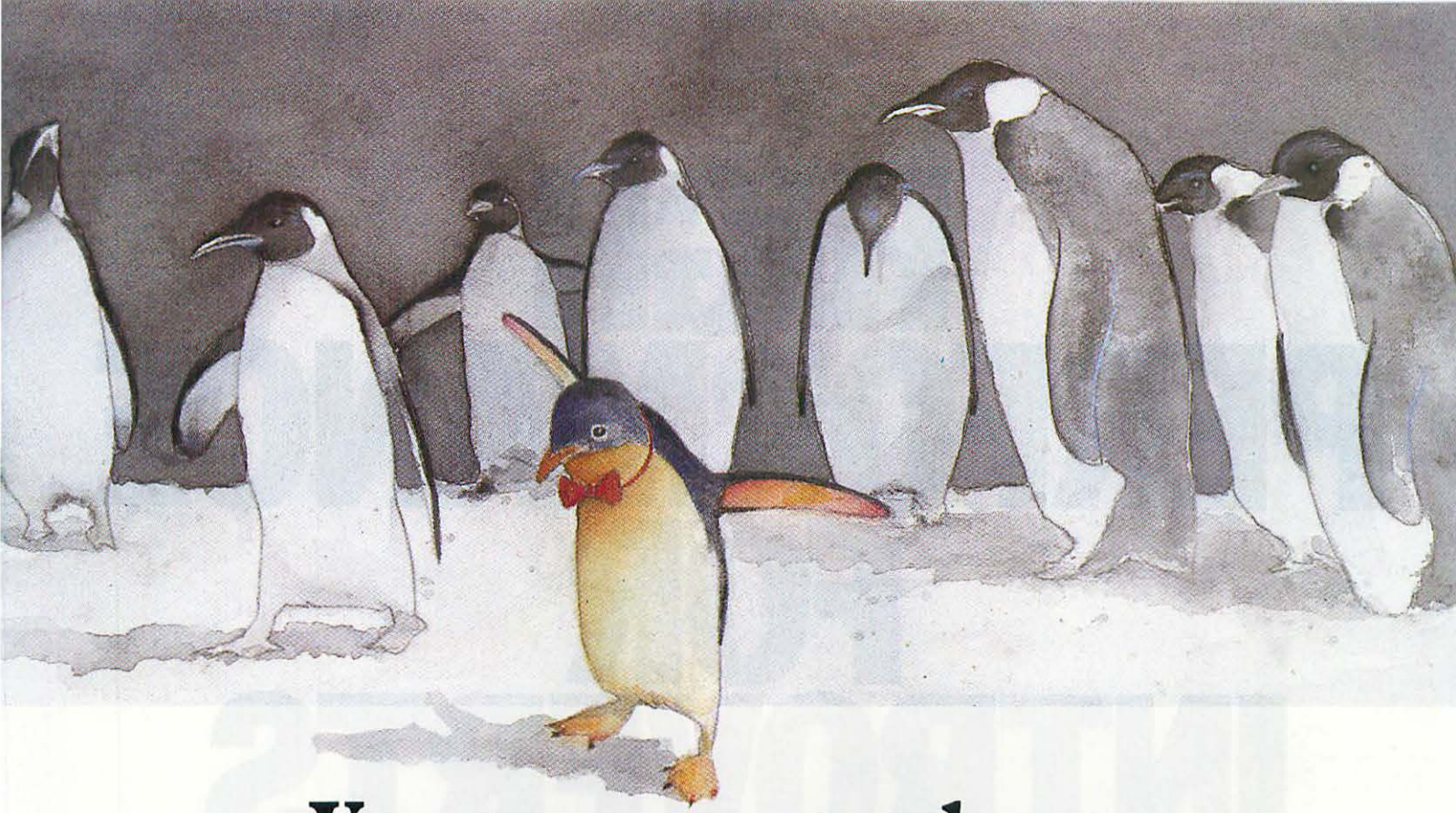
Kristin E. Smith
Moline, Illinois

Another Ax for MIDI

One problem for Steven Levy in his quest for rock 'n' roll fame ["MIDI Life Crisis," September 1986]: he's a guitarist, not a keyboard player. The next time he shoots for *Rolling Stone*'s "Who's Hot" column, he can do his composing from a MIDI-ized guitar with our Photon MIDI Guitar-to-MIDI Converter.

Kevin A. Kent
K-Muse, Inc.
Chatsworth, California

Letters should be mailed to Letters, Macworld, *501 Second St. #600, San Francisco, CA 94107, or sent electronically to CompuServe 70370,702 or The Source BCW440. Include a return address. We reserve the right to edit letters. All published letters become the property of* Macworld. □

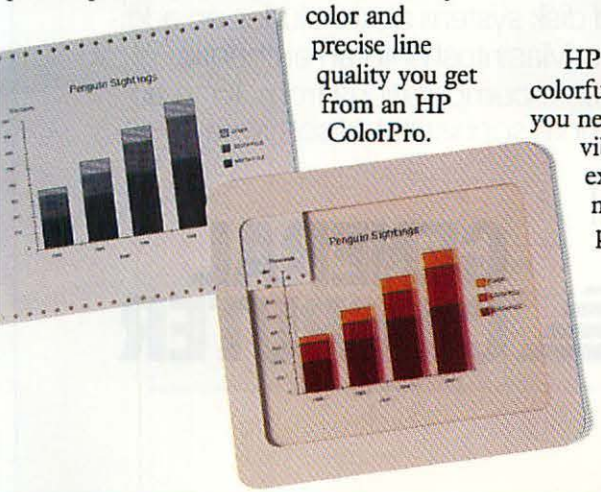


You, too, can stand out in a crowd!

Get noticed, applauded — maybe even promoted — when you break away from boring black and white and start using quality, multicolor graphics for your presentations. Team your Mac with Plotstart software and a Hewlett-Packard ColorPro plotter for colorful, professional-quality overhead transparencies. It's quick, easy, and some people even say it's fun!

Your graphics represent you.

The image you project onto that larger-than-life screen makes an instant first impression. Improvised overheads imply a quick and dirty job. Black and white printer-produced overheads lack the lively color and precise line quality you get from an HP ColorPro.



Plotstart makes it easy!

Now you can print and plot from your favorite applications software — Apple's MacDraw, Microsoft's Chart or Excel, Lotus' Jazz. Plotstart actually adds a new plotter driver to your software so you can plot directly onto an HP ColorPro. Plotstart automatically defines pen colors and fill patterns based on your graphics. Or when you're feeling creative, you can custom-tailor your graphics.

Hewlett-Packard's ColorPro makes you look good!

HP's ColorPro plotter provides the crisp, colorful, quality overhead transparencies you need — at a price you can afford! Ten vibrant pen colors let you create exciting, impressive overheads in minutes. Truly a professional presentation you'll be proud of!

Free help from your friends . . .

See the difference! Fill in the coupon below for your free MacPacket, including a colorful sample overhead. With Plotstart utility software, an HP ColorPro plotter, and your Mac, it's easy to make professional-quality overheads. You, too, can stand out in a crowd!

Solve it with SoftStyle® Solutions

YES! Send my FREE MacPacket with sample charts today!

Please print.

Name _____

Address _____

City _____ State _____ Zip _____

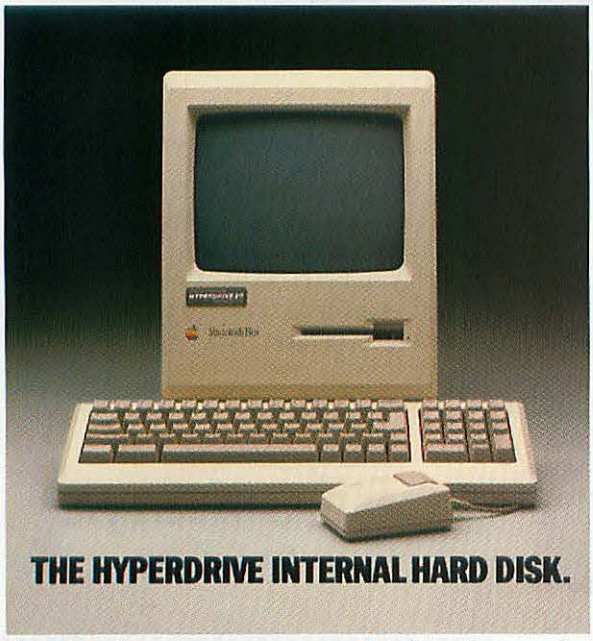
My interest is: presentations ☐ engineering ☐ design ☐.

Mail to:
SoftStyle, Inc.
7192 Kalanianaole Highway
Suite 205
Honolulu, Hawaii 96825



HP ColorPro is a trademark of Hewlett-Packard Company. MacDraw and Macintosh are trademarks of Apple Computer, Inc. Microsoft Chart and Excel are trademarks of

HIGH PERFORMANCE FOR INTROVERTS.



THE HYPERDRIVE INTERNAL HARD DISK.

If you're among the inner-directed, we can help you mold a Macintosh in your own image.

Through HyperDrive 10 and 20—the first hard disks to be installed *inside* the Macintosh and connected directly to its microprocessor.

The resulting Macintosh can, in its own quiet and very unobtrusive manner, outperform any other Macintosh in its class.

It can not only store as much information as 25 or 50 diskettes. But it will also reduce power-up time by 66% over a Macintosh Plus. Load Aldus' PageMaker 150% faster. Microsoft's Excel 250% faster. And so on.

Which should more than satisfy anyone's need for speed. Unless, of course, you need something "lightning fast," which is how Macworld magazine described HyperDrive 2000.

This internal hard disk system also includes an additional microprocessor and a floating-point processor—turning the Macintosh into an authentic number-cruncher. In fact, a Mac with HyperDrive 2000 can perform computations from 10 to an astonishing 250 times faster than a Mac Plus. And it can run far more sophisticated software.

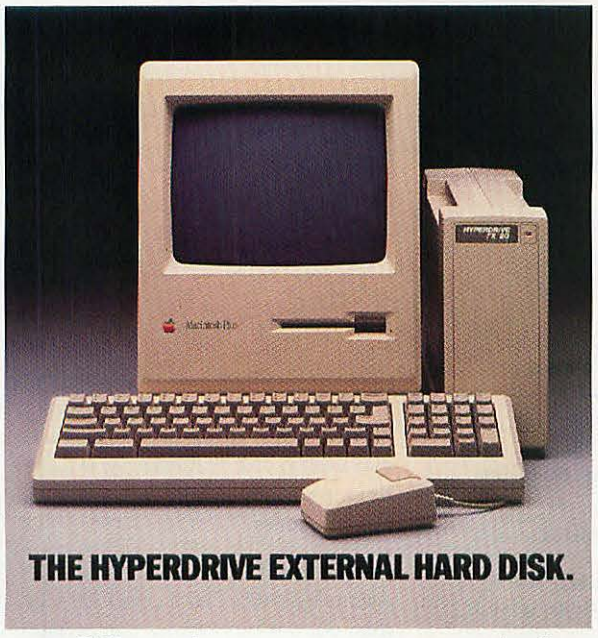
All these HyperDrives can be networked with regular Macintoshes through our HyperNet software. And since they're internal, all three preserve the Mac's portability.

But sheer speed aside, what distinguishes all HyperDrives is the software they're equipped with. Which you can learn more about by consulting the ad on the right.

GENERAL COMPUTER

*In Illinois, call (800) 854-9737. In Canada, (800) 263-1405. © 1986 General Computer. HyperDrive, HyperNet, and the General Computer logo are trademarks of General Computer. PageMaker is a trademark of Aldus Corp. Microsoft and Excel are

HIGH PERFORMANCE FOR EXTROVERTS.



THE HYPERDRIVE EXTERNAL HARD DISK.

The FX/20 and FX/40 are the most outgoing members of the HyperDrive family.

They spend their time on desktops, in the company of other office tools, and connect directly to the Macintosh's SCSI port.

The resulting Macintosh is extremely fast, which will come as no surprise to anyone familiar with HyperDrives. (If you aren't, see the fourth paragraph of the ad to the left.)

Nor is it surprising that our FX series is so accommodating, providing a vast 20 or 40 megabytes of storage.

The real surprise, at least for those familiar with external hard disks, is all the software the FX comes with.

Such as a program that protects your documents by making back-up copies of them onto diskettes.

Another program protects your documents from certain excesses of sociability—denying access to anyone who doesn't know the password you choose.

Still another program automatically queues up documents for your printer, which means that you can proceed on to other jobs without having to wait for your printer to catch up with you.

In short, no other external hard disk does everything that HyperDrive FX/20 or FX/40 does. A distinction it shares with the internal HyperDrives on the left.

And over 1200 authorized General Computer dealers will be happy to help you establish a meaningful relationship with either. For the dealer nearest you, call (800) 634-9737.*

GENERAL COMPUTER

trademarks of Microsoft Corp. Macintosh is a trademark licensed to Apple Computer, Inc.

Circle 143 on reader service card



It's here. It's called *intermail*. And it's the first truly first-class electronic mail software the Appletalk network has ever seen.

A large claim, admittedly. But not an idle one.

For one thing, *intermail* doesn't demand its own dedicated Mac. It runs totally in the background on a Mac you already have, while you work in the foreground on whatever you like.

Sending and receiving messages couldn't be easier. With *intermail's* desk accessory, a click of a button can send a message to anyone, everyone, any group you select—immediately, or at a specified future date and time. And of course you can transfer files along with your messages, even to remote locations.

Yes, I've waited long enough for electronic mail.

☐ Here's $10—send me the *intermail* demo disk and more info.

☐ I could use *intermail* right now. Here's a check or money order for (check one)
☐ 1–4 users/$299.95 ☐ 5–10 users/$499.95
☐ 11–20 users/$749.95 ☐ 21–250 users/$949.95

Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____

Mail to:
internet, 20 Amy Circle, Waban, MA 02168, 617-965-5239. Mass. residents add 5% sales tax.

Not copy protected; one copy required per network.

A demonstration version is available on the CompuServe and GEnie networks. MW 1

intermail is secure—server configuration and mailboxes are all password protected. It's bulletproof, writing all messages to disk immediately. It fully supports internetworks, bridges and multiple zones.

And the cost?
As much as 40%, 60%, even *95% less* than our not-very-nearest competition.

intermail. From *internet*, the oldest Macintosh systems house around.

No wonder it's the only electronic mail system that delivers.

We put the talk into Appletalk.

intermail

See us at Macworld Exposition booth number 532. Circle 589 on reader service card

internet and *intermail* are trademarks of Interactive Network Technologies, Inc. Macintosh is a trademark licensed to and AppleTalk is a trademark of Apple Computer, Inc.



Publish Makes Perfect?

Looking forward to even more goodies from the desktop publishing bag of tricks

At last. We're well into the second generation of desktop publishing (DTP). *PageMaker, ReadySetGo,* and *LetraPage* (formerly *MacPublisher*) have all added features that address the problems we've had with the first generation of products. New offerings such as *Ragtime* and MacAmerica's *Solo,* and batch-processing programs such as *Just Text, MacTex,* and *Textures* diverge in their approaches to DTP. The newcomers may foment as-yet-undeveloped markets or serve yesterday's dissatisfied users.

Large screens are here, bless their hearts, so we can do page design a page at a time instead of by fragments.

We should be happy, right? Not quite.

Even though we have some of the tools we want, desktop publishing is just sneaking up on real publishing needs. Personal computers still don't have a what-you-see-is-what-you-get capability, despite what you've heard. The type-on display remains merely representational, gray scale is simulated, processing is slow, pages with photographs—not merely line art—are impossible. Not until late in 1987, when third-generation DTP products will debut, will the screen truly match the printed page.

I remember sitting at a terminal at *U.S. News & World Report* in Washington, D.C., in 1980. The magazine had just installed equipment from III and Atex, leaders in the typesetting industry, and I was able to watch black-and-white photographs being scanned in and displayed on screens. Text, photographs, and line art were combined to create an entire page layout. I have been underwhelmed by anything short of that ever since.

Five years later I'm still waiting for a system that does all of that for a price I can afford. Scanners, laser printers, and software are all getting better; I may soon have that long-dreamed-about system on my desk. Without the printer, of course. Although we'll see lower-cost 300- and 400-dots-per-inch laser printers during 1987, the prices will remain steep for higher-resolution printers.

Now that my dreams are about to come true, what if I'm tempted to use the system in my job? Words are fine; I feel comfortable dealing with ideas and their expression. But what about the photographs?

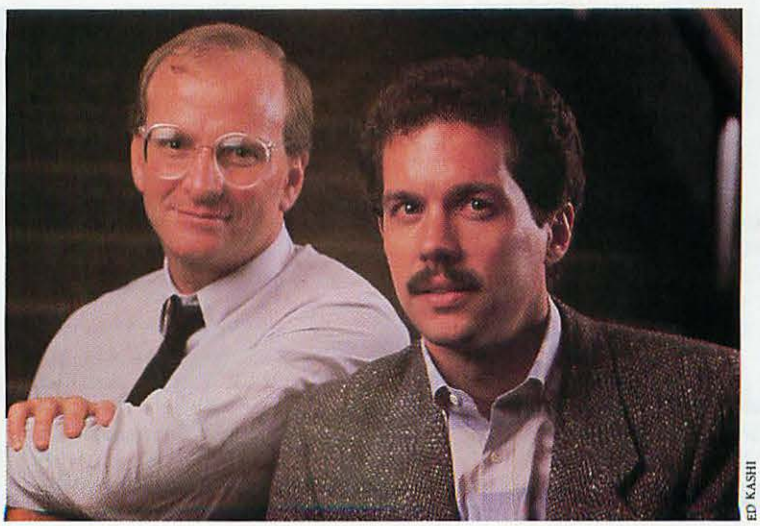
Are my cheeks too red? Maybe I should add a little more color, or take some out? With the next generation of products, I'll be able to do that. I'll have to add a color monitor; a graphics subsystem capable of manipulating the image; a hard disk, of course (3 megabytes per image eat up 20MB drives fast); and sophisticated paint software. OK, I'll spend. After all, this is the publishing industry, and I should have the latest equipment available for the Macintosh. Trouble is, I'm not trained to work on the color in my cheeks or to select typefaces or design the pages. And I really don't know where I'm going to find the time to deal with that level of detail.

Truth to tell, I see *Macworld* being produced much as it is today, even after the third generation arrives. Christopher Burg, our art director, will probably be able to review the status of stories on line; Susan Howard, our designer, may be able to receive art from our artists via AppleTalk, digitize photographs, lay the images out on pages, and flow text around them.

The art department will be able to supply templates for editors. Features editor Adrian Mello will be able to sit down at a large screen and write, while an approximation of the story layout appears. Our production department will love this, because we'll be able to reduce the time it takes to produce the magazine.

But me? I should resist the desire to tinker. My Mac is becoming more impressive, but as in so many other aspects of the real publishing world, the tools take more time than they're worth to use at the quality level we demand. I'll still be writing on the long yellow pages that you can't see, while watching a squirrel outside run across the lawn.

Or maybe the company will buy a large screen for my home. I really could use some more color in my cheeks. □



ED KASHI

Editor Borrell looks toward the future with John Scull, Apple's marketing manager of desktop publishing, who develops the marketing strategy that leads to sales for the Mac through DTP.

NEW DISK LABELS

Design and print your own quality labels for 3½" disks (front, back, and edge) in black and white or color. Labels keep disks organized, easy to find; save time, makes disks look professional; satisfaction every time you reach for a disk.

- **Version 2 with Icon Grabber and Disk Serializer** lets you grab application icons and modify for your label. Create distinctive logos with Icon Editor or with Macpaint!™ Seven windows for editing text or graphics: Disk title, edge title, back title, contents, picture, owner, and date or serial number. Save labels for easy updates. **myDiskLabeler™** also reads and sorts disk directories and supports HFS.
- **Color and LaserWriter™ Printing Options** available with Imagewriter II™ or LaserWriter.
- **Precision Printing** for one or more labels. Graphics interface makes alignment of Smart Labels™ quick, easy.
- **Smart Labels and Laser Labels™** **myDiskLabeler** comes with 54 Smart Labels especially designed for Imagewriter printer (and 54 Laser Labels with the Laser Option). Labels wrap around disk edge, have a matte finish.

Call today, or ask your Apple dealer.
Call Toll-free: **1-800-752-4400**
M-F 8:00 a.m. to 5:00 p.m. PST
Washington & Alaska, call (509) 458-6312
Visa or MasterCard.

Version 2
ONLY $44.95*

With Color Option
ONLY $54.95*

With LaserWriter Option
ONLY $64.95*

Refills:
216 Smart Labels $18.00
216 Laser Labels $22.00

Shipping to 48 states is $3.00
($1.00 for each additional item)
Macintosh (MacPlus, 128, 512, or XL) and Imagewriter or LaserWriter required.

*Washington State residents add 7.8% sales tax.

Williams & Macias Microcomputer Products

P.O. Box 19206, Spokane, WA 99219

Macintosh, Imagewriter, Macpaint and Laserwriter are trademarks of Apple Computer, Inc.

Circle 374 on reader service card

Contributors Notes

Daniel Ben-Horin *("Insights on the LaserWriter" and "Mac Finance Tools") is a San Francisco journalist and computer consultant who works with writers and nonprofit groups. His work has appeared in* The New Yorker, Redbook, *and* Mother Jones, *and he is a regular contributor to* Macworld *with coauthor Charles Seiter.*

Danny Goodman *("Up on the Big Screen") is a contributing editor of* Macworld *and the author of a book on advanced* Excel *techniques,* Hands-On Excel, *published last year by Scott, Foresman & Co.*

Apologies to James Halcomb, whose biographical note was left out of the November issue of Macworld:

James Halcomb *("Mac Business Tools," November 1986) heads a project management firm in Sunnyvale, California. He wrote* The Project Manager's PERT/CPM Handbook *and* Planning Big with MacProject, *published last year by Osborne/McGraw-Hill.*

Jim Heid *("New on the Desktop") is a contributing editor of* Macworld *who writes the monthly "Getting Started" column for people new to the Mac. He has written* dBase Mac in Business, *forthcoming from Ashton-Tate Publishing Group.*

Prasad Kaipa *("Mac Desktop Tools") is an assistant professor of radiobiology at the University of Utah, where he has been researching the effects of radiation fallout in Japan and southern Utah. He also consults on Mac application programs, especially graphics, through his firm, MacWiz Consulting.*

Rick LePage *("Shopping for SCSI Storage") has been writing about personal computers and telecommunications for six years. His interest in the Mac began with an Apple Lisa that landed on his desk for an extended trial. In June 1985, he cofounded the respected newsletter* MacInTouch, *published monthly by Ford-LePage in Framingham, Massachusetts.*

Steve Mann *("Building a Multiuser Application") is a freelance writer, product design consultant, and financial systems developer based in San Francisco. He frequently writes on accounting for* Macworld, *including the exhaustive "Accounting Software Buyer's Guide" in the September 1986 issue. He also writes a column for the* San Jose Mercury News *on using personal computers for financial investment management.*

Charles Seiter *("Insights on the LaserWriter" and "Mac Finance Tools") is a chemistry professor turned computer writer who telecommutes from his woodland home in Willits, California. His published works include* The Skeptical Consumer's Guide to Used Computers *from Ten Speed Press and books on Pascal and computerized financial planning for Addison-Wesley.*

Desktop Publishing Power Redefined.

Introducing the only desktop publishing program capable of real-time hyphenation, automatic text runarounds, kerning and spell checking.

Click on Ready,Set,Go! 3's Design Grids and a preformatted grid appears. Your layout takes shape effortlessly as text blocks snap to the nearest grids.

As you type, words hyphenate in an eyeblink. Editing changes ripple through your columns while paragraphs reformat and rehyphenate instantly.

Misspelled your boss's wife's name? Ready,Set,Go!'s Find feature flashes through your text to replace this fatal *faux pas.*

A 60,000-word spelling checker proofs your stream-of-consciousness prose quickly – giving you more time to be creative.

No need to type *supercalifragilisticexpialidocious* repeatedly. Glossaries speedily retrieve this and other verbose text with a single keystroke.

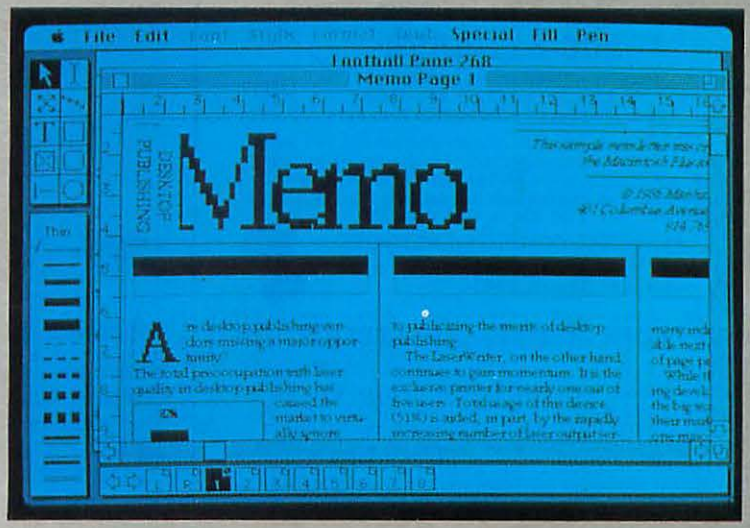
Just finished a great novel in Microsoft® Word or MacWrite™? No problem, import these files as formatted.

Ready,Set,Go! gives you the runaround.

When you're ready to add graphics, Get Picture retrieves your MacDraw,™ MacDraft,™ MacPaint,™ FullPaint™ – or other compatible art – quickly.

Now drop a picture block on any text area. Spontaneously, the text reconfigures itself to snake around your graphic – an incredible timesaver.

Use this technique to wrap text around large capitals or graphics created with built-in drawing tools.



Windows with a view.

Open several windows to combine cut-and-pasted elements from many different documents.

You'll be the Dali of desktop publishing, splashing text and graphics throughout several works at once. Not just productive – but prolific, too.

And you won't mind doing windows using Ready,Set,Go!'s five fascinating views – which include full-page editing.



Remarkable design features.

Ready,Set,Go! also kerns, letterspaces or shifts text up or down with a single keystroke. Not sold yet? How about direct PostScript™ programming for stunning effects? And an unlimited page capacity with automatic page numbering, time-and-date stamping and left/right master pages?

We're sure that no other program even approaches Ready,Set,Go! in design power, text entry flexibility, ease of use, execution speed or price: only $295. While words cannot adequately describe this revolutionary program, our video demo can. For $15 we'll send you an informative videotape to demonstrate Ready,Set,Go!'s versatility. To order Ready,Set,Go! or the videotape call us at **800-634-3463** (in New York call 914-769-2800). Or visit your nearest dealer.

Manhattan Graphics.

401 Columbus Avenue, Valhalla, NY 10595

FullPaint is a trademark of Ann Arbor Softworks. MacDraft is a trademark of Innovative Data Design Inc. Macintosh, MacDraw, MacPaint and MacWrite are trademarks licensed to/of Apple Computer Inc. Microsoft is a registered trademark of Microsoft Corp. PostScript is a trademark of Adobe Systems Inc. Ready,Set,Go! is a registered trademark of Manhattan Graphics. Ready,Set,Go! requires a 512K Macintosh.

Circle 2 on reader service card

PC NETWORK — THE # 1 SOURCE FOR ALL

MEMBERS PAY WHOLESALE + 8% OR LESS AND GET 14-30 DAY SOFTWARE RENTALS†



OUR ROSTER INCLUDES SOME OF THE MOST IMPORTANT NAMES IN INDUSTRY:

AT&T	General Motors
Barclays Bank	Gillette
Bell & Howell	Hewlett Packard
Citibank	Hughes Aircraft
Columbia University	IBM
Exxon	ITT
Farm Bureau Insurance	Kodak
General Electric	Yale University

Plus 150,000 THOUSAND satisfied consulting firms, small businesses, governments, schools and value minded individuals.

CALL TOLL FREE
800-621-SAVE

(Orders—Membership and Advice!)
In Illinois Call (312) 280-0002
Your Membership Validation Number UU17

You can validate your membership number and, if you wish, place your first money-saving order over the phone by using your VISA, MASTERCARD or AMERICAN EXPRESS. **Our knowledgeable sales consultants are on duty Mon.-Fri. 8:00 AM to 7:00 PM, Sat. 9:00 AM to 5:00 PM CST.**

PERSONAL COMPUTER NETWORK
320 West Ohio Street
Chicago, Illinois 60610



PC NETWORK MEMBERSHIP APPLICATION

YES! Please enroll me as a member in the PC NETWORK™ and send my catalog featuring thousands of computer products, all at just 8% above DEALER WHOLESALE PRICES. I will also receive "THE PRINTOUT", a special quarterly update on merchandise at prices BELOW even those in my wholesale catalog and all the other exclusive, money-saving services available to Members. I am under no obligation to buy anything. My complete satisfaction is guaranteed. U17

Please (✓) all boxes that apply:

	1 Year	2 Year
•Basic Membership With 14 Days Rental	**$8** ☐	**$15** ☐
Business Software Rental Library	$25 ☐ add'l. per year	
Games Software Rental Library	$10 ☐ add'l. per year	
•Special V.I.P Membership With 30 Days Rental BOTH Business and Game Software Rental Libraries	**$15** ☐	**$25** ☐
	$30 ☐ add'l. per year	

☐Bill My Credit Card: ☐VISA ☐MasterCard ☐American Express
Account Number: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Exp. Date _____ (mon. yr.)

☐Check or Money Order Enclosed for $ _____

Name _____

Address _____ Apt. No. ____

City _____ State _____ Zip ____

Telephone ( ) _____

My Computer(s) is: ☐IBM PC ☐IBM XT ☐IBM AT ☐Apple II ☐Macintosh Other _____

Signature _____
(Signature required to validate membership)

Copyright© 1986, PC NETWORK, INC.

Macintosh

512K Enhanced/Mac Plus
400/800 Disk Drive, Keyboard
Mouse, Software

PRICES TOO LOW TO PRINT!





LASER 128

128K RAM, 1 Internal Drive,
Apple IIe/IIc Compatible
1 Parallel and 2 Serial Ports Included

$355.00*



15" WIDE

IMAGEWRITER

w/Mac Kit $475.00*

MICROSOFT



EXCEL $197.50*

(At Unheard of Prices!!!)

Flight Simulator	$27.00*
BASIC	75.00*
Chart	$62.50*

DISKETTES

Guaranteed for Life!
Brand name diskettes available in boxes of 10 or in bulk packs of 50

5¼" SS/DD
Box of 50 .44* ea.
Box of 10 $7.95*

3½" SS/DD Box of 10
$12.50*
Free Flip 'n' File Case

3½" DS/DD Box of 10
$16.95*
Free Flip 'n' File Case

INFOCOM



$20.00* $19.75* $21.50* $21.50*

Available for Apple II & Mac

APPLE

MAC TERMINAL
Mac's Most Popular Communication Package

$77.00*

APPLE

MAC DRAW
Apple's Most Complete Design Package for the Mac

$125.00*

EPSON PRINTERS



LX 86	80COL/120CPS	$219.00*
FX 85	80COL/160CPS	355.00*
FX 286	132COL/200CPS	440.00*

***PC Network Members pay just 8% above the wholesale price, plus shipping.** All prices reflect a 3% cash discount. Wholesale prices fluctuate rapidly—all prices in this issue have been prepared 60 days in advance. Please call for latest prices. Minimum shipping $2.50 per order. International orders call for shipping & handling charges. Money Orders, personal and company checks please allow 10 working days to clear.

MONOGRAM

DOLLARS AND SENSE

$71.99* **for the Mac**

First Byte®
Smooth Talker
$44.00*

CENTRAL POINT Software
Copy II Mac
$16.25*

YOUR MACINTOSH NEEDS!

OVER 30,000 PRODUCTS AT EVERYDAY LOW, LOW PRICES!

GAMES AND EDUCATIONAL SOFTWARE

(Please add $1 shipping and handling for each title ordered.)

	Wholesale
Activision *Hacker, Hacker II, Mindshadow Mindshadow, Borrowed Time*	$25.50*
Activision *Shanghai*	24.40*
Apple *MacDraw*	125.00*
Bluechip *Baron, Millionaire, Tycoon*	28.99*
Broderbund *Ancient Art of War*	23.75*
Broderbund *Lode Runner*	19.75*
Broderbund *Toy Shop*	34.50*
Electronic Arts *Chessmaster 2000, Archon*	29.97*
Electronic Arts *One, On One*	25.00*
Electronic Arts *Pinball Construction Set*	26.97*
Epyx *Temp.of Apshai Tri,Rogue*	ea. 21.00*
1st Byte *Smooth Talker*	44.00*
Hayden *Sargon III*	24.75*
Infocom *Deadline, Suspended*	24.00*
Infocom *Zork/Witness/Planetfall/Cuthroats*	20.00*
Infocom *Zork II/III Suspect/Infidel/Sorcerer*	21.50*
Infocom *Hitchhiker's/SeaStalker*	$19.75*
Infocom *Leather Goddesses of Phobos*	20.00*
Infocom *Trinity, Ballyhoo*	20.00*
Microsoft *Flight Simulator Mac Only*	27.00*
Miles Computing *MacAttack/Harrier Strike*	22.00*
Mindscape *A View to a Kill, The Mist*	21.00*
Mindscape *Balance of Power*	26.50*
Mindscape *Deja Vu*	28.00*
Mindscape *Rambo: First Blood Part II*	21.00*
Polarware *Xyphus, Transylvania*	13.17*
Scarborough *Mastertype*	26.50*
Sierra On-Line *Frogger*	19.50*
Simon & Schuster *Typing Tutor III*	35.97*
Sir-Tech *Wizardy I*	28.99*
Spectrum Holobyte *GATO*	22.00*
Telarium *Dragon World/Farenheit 451*	12.50*
T/Maker *Click Art*	25.00*

BUSINESS SOFTWARE

(Please add $2.50 shipping and handling for each title ordered.)

Ann Arbor *Fullpaint*	$53.00*
Apple *MacTerminal, MacPascal*	83.00*
Arrays *Home Accountant/Fin. Planner*	69.00*
Beagle Brothers *Macroworks*	21.00*
Borland *Reflex for the Mac*	59.00*
Borland *SideKick for Mac*	48.00*
Borland *Turbo Pascal for Mac*	59.00*
Boston Software *MacPublisher*	72.00*
BrainPower *Statview 512 Plus*	159.00*
Central Point *Copy II Mac*	20.00*
Creative Solutions *MacForth Level I*	41.00*
Creative Solutions *MacForth Level II*	69.00*
Creighton *MacSpell +*	44.50*
Desktop Software *1st Base*	55.00*
Dillithium *PC to MAC and Back w/cables*	89.97*
Haba *Habadex*	40.00*
Hayes *Smartcom II For Mac*	78.00*
Layered Software *Front Desk*	65.00*
Layered Software *Notes for Jazz or Excel*	186.00*
Living Videotext *More*	139.00*
Living Videotext *ThinkTank (128K Ver.)*	$65.00*
Living Videotext *ThinkTank (512K Ver.)*	85.00*
Microsoft *Basic For the Mac*	75.00*
Microsoft *Chart*	62.50*
Microsoft *Excel*	197.50*
Microsoft *File*	102.00*
Microsoft *Word, Multiplan*	97.50*
Microsoft *Works*	163.00*
Odesta *Double Helix*	282.00*
Peachtree Software *G/L, A/P, A/R*	ea. 73.00*
Provue *Overvue*	145.00*
Sierra *Mac One Write, A/P, A/R, G/L*	ea. 69.00*
Softstyle *Epstart, Jetstart, Toshstart*	ea. 21.25*
Software Publishing *PFS: File/Report Comb.*	85.00*
Stoneware *DB Master*	105.00*
Telos *Business Filevision*	185.00*
T/Maker *Click On Worksheet*	33.00*
Tronix/Monogram *Dollars & Sense*	71.99*
Truebasic Inc. *True Basic*	79.00*

HARDWARE

(Add 2% to the member price for each item for shipping and handling.)

COMPLETE SYSTEMS

Apple *Apple IIc, Apple IIe, Macintosh*	CALL
Central Point *Laser 128 Apple IIe and IIc Compatible*	$355.00*
Compaq *Deskpro w/256K 1 Floppy 10MB Hard Disk*	1,775.00*
▶**Compaq** *Hard Disk Portable 20MB Hard Disk/1 Floppy w/256K*	1,800.00*
▶**IBM** *PC Base System 2DD/DS/FDC/256K*	1,025.00*
▶**IBM** *PC Professional 20MB Hard Disk 1DD/DS/FDC/256K*	1,337.00*
▶**IBM** *PC AT Base System 1.2MB Floppy w/256K*	2,204.00*
IBM *PC AT All Configs*	CALL

DISK DRIVES

▶**Apple** *800KB External Drive*	$283.95*
Apple *20MB HD for IIe/Mac*	924.00*
AST Research *20 MB Hard Disk w/20 MB Tape For Mac+*	1885.00*
DC Systems *Easy Drive 20MB HD*	650.00*
▶**IOmega** *10MB Bernoulli/SCSI Port*	1,766.00*
IOmega *Dual 20MB Bernoulli Box for Mac SCSI*	2,199.00*
IOmega *Dual 10MB Bernoulli Box for Mac SCSI*	1,700.00*
Paradise *10MB Hard Disk & Subsystem*	525.00*
Paradise *20MB Hard Disk for the Mac*	745.00*
PC Network *800KB DS/Mac add on drive*	185.00*

MODEMS

Apple *Modem 300*	$139.00*
Apple *1200BPS Personal Modem w/kit*	275.00*
Compucable *Mac to Smartmodem cable*	16.00*
Hayes *Smartmodem 1200*	340.00*
Hayes *1200 w/Smartcom II & Mac cable*	417.00*
Hayes *Smartmodem 2400*	525.00*
Prometheus *Promodem 1200 w/MacPac*	253.00*
U.S. Robotics *Password*	172.00*
U.S. Robotics *Courier 2400BPS Modem*	345.00*

THE™ MODEMS ARE 100% HAYES COMPATIBLE

▶THE™ *1200 Com External*	119.00*
▶THE™ *2400 Com External*	259.00*

PRINTERS

Apple *Imagewriter II 10" Carriage 250 CPS/45 CPS NLQ/Color Capable*	$419.00*
Apple *Imagewriter w/Mac Kit*	475.00*
▶**Apple** *LaserWriter*	3,520.00*
Epson *DX-35 Daisywheel 33CPS LQ*	590.00*
Epson *EX-800 300/60CPS 80COL Par/Ser*	455.00*
Epson *EX-1000 300/60CPS 80COL Par/Ser*	629.00*
Epson *LX-86 120CPS 8.5" Par*	219.00*
Epson *FX-85 80COL/160CPS*	355.00*
▶**Epson** *FX-286 15" platen/200CPS/NLQ*	440.00*
Epson *LQ-800 180/60CPS NLQ*	519.00*
▶**Epson** *LQ-1000 180CPS/60CPS NLQ P/S*	699.00*
Epson *LQ-2500 324/108CPS 132COL P/S*	995.00*
Okidata *ML 192/AP 10" 160CPS LQ*	CALL
Okidata *ML 193/AP 15" platen*	CALL
Toshiba *P351 PAR/SER 15" 288/100CPS*	959.00*
Toshiba *P321 PAR/SER 10" 216/72CPS*	475.00*
▶**Toshiba** *P341 PAR/SER 15" 216/72CPS*	649.00*

ACCESSORIES

(Freight minimum $1 per item.)

Apple *Mac Security Kit*	$29.00*
Assimilation Process *MacTurboTouch*	73.50*
Assimilation Process *Mac Poet Adapter*	51.00*
Computer Coverup *Mac Cover (2 Pc)*	8.77*
Creighton *Propaint w/cable*	59.40*
Curtis *Diamond Surge Protector*	23.50*
Curtis *Ruby Surge Protector*	39.00*
Innovative Concepts *Flip 'n' File II*	15.48*
Innovative Concepts *Flip 'n' File Micro (25)*	6.69*
Kensington *System Saver Fan for Mac*	63.00*
Kensington *Control Center*	53.00*
Kensington *Starter Kit*	49.00*
▶**Koala** *MacVision*	144.50*
Maxell *Mac Diskettes (Box of 10)*	17.50*
PC Network *Mac Diskettes SS/DD (Box of 10)*	12.50*
PC Network *Mac Diskettes DS/DD (Box of 10)*	16.95*
PC Network *Imagewriter Ribbons (Per 12)*	36.00*
▶**Thunderware** *Thunderscan*	155.00*
Sony *3.5" Diskettes (Box of 10) DS/DD*	19.00*
WP Printer Paper *2600 Sheets Micro Perfs*	17.00*

†**RENT BEFORE YOU BUY**—Members are eligible to join the NETWORK'S Business and Game Software Rental Libraries to evaluate products for a full 14 (Regular) or 30 (V.I.P.) days to see if they meet your needs. And the NETWORK'S rental charges are far less than other software rental services—JUST 20% OF THE MEMBER WHOLESALE PRICE. **We feature over 1,000 available titles in IBM/Apple/Mac and CP/M.**

Circle 45 on reader service card

PC NETWORK



NEW! PC NETWORK ONLINE

A 24 Hour Bulletin Board and Information Service Center

- ***FREE SOFTWARE: Over 20,000 downloadable shareware titles.***
- ***NEWS FLASHES AND REVIEWS: Tie into the worlds largest computer News Network .Get all the latest on Apple,™ IBM,™ Mac, Unix and related subjects.***
- ***PLACE ORDERS, LEAVE MESSAGES FOR TECHNICAL SUPPORT—DAY OR NIGHT.***
- ***LATEST PRICING: and Special Sales on PC Network Products.***

PC Network improves on the benefits its members continue to enjoy...

- ***WHOLESALE + 8% PRICING.***
- ***10 DAY RETURN ON HARDWARE***
- ***600 PAGE NETWORK CATALOG***
- ***QUARTERLY NEWSLETTER***
- ***14-30 DAY SOFTWARE RENTAL***
- ***FREE TECHNICAL SUPPORT***

30 Day Money Back Guarantee on Membership

TOLL FREE (800) 621-SAVE

In Illinois (312) 280-0002 Validation Code UU1

Customer Service and Order Status (312) 280-1567

FLUENT LASER FONTS™

PostScript™ Typefaces for the Macintosh™ & LaserWriter™

THIS AD WAS CREATED WITH FLUENT LASER FONTS & PRINTED ON THE LINOTRONIC 100P

New Fonts at Expo

Come and visit us in Booth 512 at the January Macworld Expo.

Bodoni Ultra & *Italic*
Ultra Condensed **Bold Condensed**
Micro Regular Extended **Bold**
Sans Serif BOLD Condensed
Extra Bold SHADOW
Gregorian Dorovar
Zephyr Script Coventry Script
Гражданский Шрифт GATSBY LIGHT
Russian & Ukrainian

1 BODONI
Italic **Bold**
BoldItalic

2 SANS SERIF
Italic Book
BookItalic
DemiBold
DemiItalic

3 RIGHT BANK
RITZ
RitzCondensed
RitzItalic

4 MONTEREY
Italic
Medium
Bold
BoldItalic

5 Regency Script Calligraphy

6 Prelude Script
Light Slant
Bold
Bold Slant

Six Volumes Available—Each Sold Separat

- Automatic Downloading to LaserWriter or Linotroni
- Fully Compatible, including PageMaker 1.
- European and Scandinavian Accents • Not Copy Protecte
- Reasonable Prices and Small License Fee forMultiple Printer
- Screen Fonts and Printer Installation Disk with each packag

Casady Company P. O. Box 223779 Carmel, CA 93922

FOR ORDERS CALL **(800) 331-4321** OR IN CALIF. **(800) 851-198**
FOR INFORMATION CALL (408) 646-4660 • MCI MAIL: CASADY 2721695

TRADEMARKS: Fluent Fonts, Fluent Laser Fonts–Casady Company; Macintosh, LaserWriter, ImageWriter–Apple Computer Inc.; PostScript–Adobe Systems Inc.; Linotronic–Allied Linotype; PageMaker–Aldus Corporation.

SPELLSWELL

The Best Spelling Checker For the Macintosh

★★NEW VERSION★★ Now checks MORE, JAZZ and Microsoft Works documents, too! 93,000 Word Dictionary

But Don't Take Our Word For It!...

"Our highest recommendation goes to Spellswell." Result of comparative review of Spellswell, The Right Word, MacSpell+, MacLightning 2.0, MacSpellRight, Liberty Spell-Checker, Hayden: Speller and Spelling Champion. *The Macintosh Journal, May 1986*
MacUser, October, 1986

"Spellswell is an excellent spelling checker being relatively fast, and containing a number of features not found in any other spelling checker." *Computing Today Vol 1, Issue 23*

"The program is easy to use and is the best of the second generation spelling programs." *Morris Herman, South Coast Macintosh User's Group*

"It's a super spell checker for the Macintosh—the best out there." *John Dvorak, InfoWorld, May 26, 1986*

"...unusually well designed...Spellswell is an impressive spelling checker for the Macintosh. It is very easy to learn and use, and the vendor provides responsive support." *InfoWorld, July 14, 1986*

"It is easy to use, easy to learn, and performs flawlessly...Spellswell is definitely the best value of all the programs I reviewed." *Nibble Mac, October, 1986*

"And it's a great spelling checker." *Guy Kawasaki, Apple Computer, Inc.*

. . . AND IT IS STILL ONLY $59.95! as of 1/1/87 the price will be $74.95

GREENE, JOHNSON INC.
15 Via Chualar, Monterey, California 93940

INFO HOTLINE (408) 375-2828

Please send me___Spellswell(s).
☐ Charge my ☐ Visa ☐ MasterCard.
Card#_____
Signature_____Exp. Date___

To Order: (800) 331-4321
(in CA) (800) 851-1986

VISA
MasterCard

NAME_____
ADDRESS_____
COMPANY_____
CITY_____
STATE_____ ZIP_____
PHONE ( )_____

FEATURES

• Easy To Use • **Greatly Enhanced Speed** • Unlimited Document Size • **Checks For Duplicate Words Like 'the the'** • Enforces Abbreviation Standards • Checks Homonyms • **93,000 Word User Modifiable Dictionary** • Maintains Capitalization • Separate Document Dictionaries • Finds Capitalization Errors Like "THis" • Works On All Macintoshs Except 128k

Checks Living Videotext MORE and ThinkTank, Lotus JAZZ, Microsoft WORKS and WORD, MacWrite, and text documents.

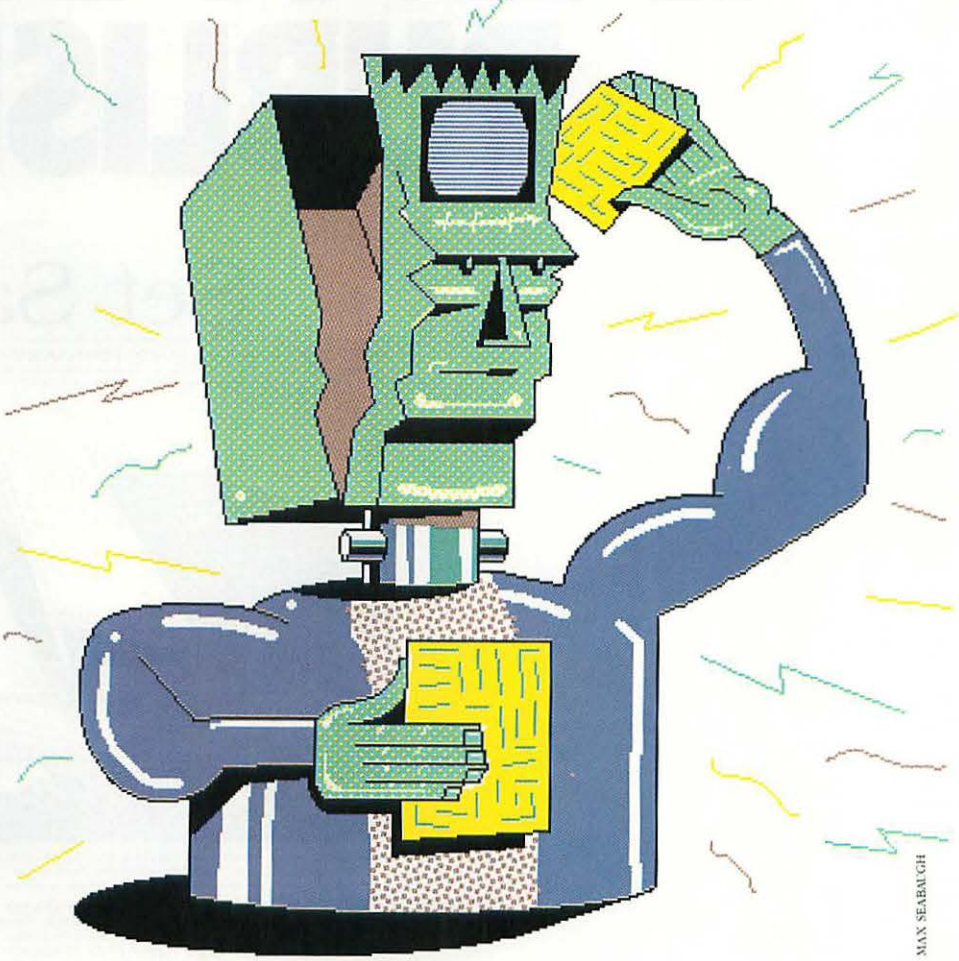
Trademarks Spellswell - Greene, Johnson Inc., Macintosh and MacWrite - Apple Computer, Inc., ThinkTank and MORE - Living Video Text, Inc., JAZZ - Lotus Development Corp., Works - Microsoft Corp.

Circle 520 on reader service card

Steven Levy

A Shut and Open Case

How "unauthorized" modifications to the Mac became commonplace



MAX SEABAUGH

For the next few months, everybody is going to be talking about the brand-new open Mac. This is the computer, not yet announced at press time, that will not only be more powerful than the existing model but will also be expandable. Just as happened with those computer classics the Apple II and the IBM PC, people will be encouraged to open the case and stick in all sorts of circuit boards to enhance their machines. This new approach addresses a much criticized aspect of previous Macs—a closed architecture in which internal hardware modifications were deemed unnecessary.

But an irony lurks here. There already *is* an open Mac. Four of them, to be exact: the Macintosh 128K, the Macintosh 512K, the Macintosh 512K Enhanced, and the Mac Plus. The community of Mac owners, developers, and dealers has ignored the dire admonitions of the manufacturer and begun a lively trade in internal modifications. In essence, a grass roots movement has flipped the lid on the supposedly "closed" computer. The people have spoken: the Mac is open.

At last summer's Macworld Expo in Boston, it was difficult to walk 20 feet in any direction without encountering a product that required installation inside the Mac, whether a memory board, a SCSI port, a coprocessor board, or a video hookup. If you hung around long enough, you could even see people standing by while technicians operated on their machines. The Mac owners had the same worried countenances as parents whose newborn sons were undergoing circumcision, but when the machine was reassembled and the happy face reappeared on the screen, the reaction was invariably joyous.

How common are these products becoming? Rick Green, a vice president of Dove Technologies, which makes memory boards, estimates that *60 to 65 percent* of Mac owners will eventually subject their machines to internal modification.

This is especially remarkable in light of the fact that Apple Computer originally regarded an unauthorized incursion inside the Macintosh case as an unforgivable transgression. The penalty was emphasized with a nearly biblical fierceness: Shunning. Expulsion from the family. Termination of warranty. End of service contract.

Though critics complained bitterly about the inaccessibility of the Mac's innards, Apple's company line was that only hackers and weirdos would have an interest in prying the machine open. The rest of us would have our needs more than satisfied by software solutions.

Which of course did not prove to be true.

Opening Pandora's Box

The first major incursion was made in late 1984 by General Computer Corporation, which introduced HyperDrive. By hooking to the motherboard, this internal hard disk ran much faster than any drive connected to the "approved" serial port on the back of the machine. Of course, violating the Mac's

(continues)

IF THIS IS YOUR IDEA OF DESKTOP PUBLISHING,



Set Sail

THE PUBLICATION OF THE BEACON BEACH YACHTING SET • VOLUME II • ISSUE 4

This is how it sort of looked as the "Minnow," piloted by racing newcomer James Stephens of Moss Beach, surged ahead to win the recent Half Moon Bay to Snug Harbor Regatta.

Stephens Victorious in Inaugural Yacht Race

In a race filled with risky manuevers and even riskier weather, James Stephens, captain of the 12-meter sloop "Minnow", and his crack 7-man crew conquered 20' swells and a field of 33 contenders to win the first ever Half Moon Bay to Snug Harbor Yacht Race.

A modest Stephens credited his crew for the hard-fought victory, praising their stamina and undying drive to win. "I'd have to say, if it wasn't for the courage of my fearless crew, the Minnow would have lost," Stephens joked

Continued on page 4.

It took a talented artist over 3 hours to draw this picture.

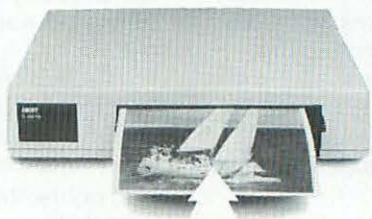
What you're really missing is PC Scan Plus,™ the new intelligent scanner from DEST.

Now you can scan a photograph into your computer in just seconds. And with our Publish Pac™ software, you can size it, crop it, enhance it and transfer it into your desktop publishing program.

And from there, print out a high-quality half-tone with the best resolution your laser printer can print.

What's more, you can do the same with drawings, logos, mastheads, charts and other graphics. Which means now you don't have to be an accomplished artist to accomplish a lot.

But then, considering all the power you're adding to your desktop, that's not too surprising. You see, unlike less intelligent scanners, PC Scan Plus comes with its own microprocessor,





In seconds, PC Scan Plus lets you scan photos, graphics and even text into your Macintosh™ Plus, IBM® and compatible PCs. Which makes it the easiest way to put words and pictures on paper.

YOU'RE MISSING THE BOAT.



Set Sail

THE PUBLICATION OF THE BEACON BEACH YACHTING SET • VOLUME II • ISSUE 4

Pictured here is the "Minnow," piloted by racing newcomer James Stephens of Moss Beach, surging ahead to win the Half Moon Bay to Snug Harbor Regatta. (Photo by George Chadwick)

Stephens Victorious in Inaugural Yacht Race

In a race filled with risky manuevers and even riskier weather, James Stephens, captain of the 12-meter sloop "Minnow", and his crack 7-man crew conquered 20' swells and a field of 33 contenders to win the first ever Half Moon Bay to Snug Harbor Yacht Race.

A modest Stephens credited his crew for the hard-fought victory, praising their stamina and undying drive to win. "I'd have to say, if it wasn't for the courage of my fearless crew, the Minnow would have lost," Stephens joked

Continued on page 4.

It took PC Scan Plus just 30 seconds to scan this photograph.

more memory than most PCs, and even a SCSI interface.

All of which lets you do plenty more, plenty fast. And in much more graphic detail.

WE ALSO HAVE A WAY WITH WORDS.

PC Scan Plus can do for words what it does for pictures.

So now, instead of retyping text, you can simply scan it into your computer. Edit or add to it. Then transfer the information into your desktop publishing program and go to press.

Of course, scanning words is nothing new to us. For nearly a decade, DEST has been making the leading line of scanners for word processing systems. And now we're out to do the same for desktop publishing.

So call and ask us about PC Scan Plus today. Or you won't know what you're missing.

DEST

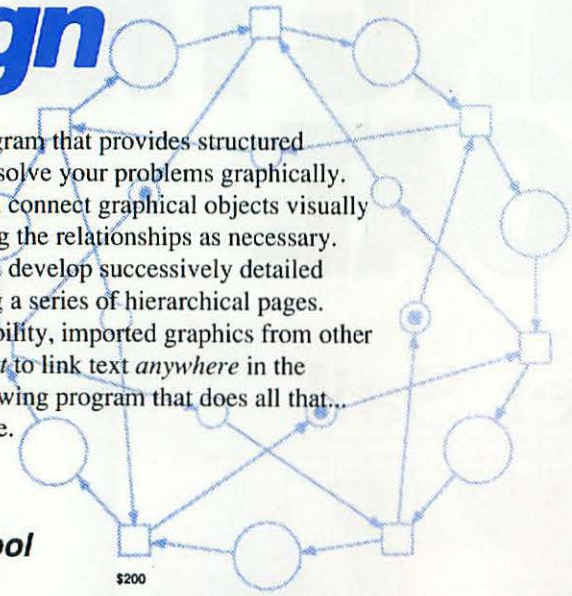
Outside California, 800-538-7582.
In California, 408-946-7100.

© 1986. DEST Corporation. PC Scan Plus and Publish Pac are trademarks of DEST Corporation. Other names indicated by ™ or ® are trademarks and/or tradenames of their respective manufacturers. PC Scan is not to be confused with PC Scanner, a product of Caere Corp.

Circle 615 on reader service card

Intelligent Graphics for Intelligent Solutions

design



Imagine a drawing program that provides structured techniques to help you solve your problems graphically. A program that lets you connect graphical objects visually *and logically*, redrawing the relationships as necessary. A program that lets you develop successively detailed descriptions by creating a series of hierarchical pages. Now add full text capability, imported graphics from other programs, and *hypertext* to link text *anywhere* in the diagram. Imagine a drawing program that does all that... Stop imagining, it's here.

design

The Thinker's Tool



Meta Software
55 Wheeler Street
Cambridge MA 02138 USA
617.576.6920

$200

design is expandable for simulators, analyzers, and OEM products. It is available for the Apple® Macintosh® 512K and Plus, and is HFS compatible.

®trademarks owned by, or licensed to, Apple Computer, Inc.

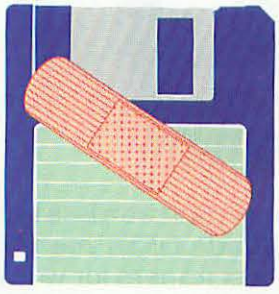
© 1986 Meta Software Corp.

Circle 596 on reader service card

1st Aid for Files

If a file is recoverable, you can save it!

Prevent disaster
You don't buy a fire extinguisher after the house has burned down. You need a **1st Aid Kit**™ before you get a serious error message.



Protect productivity
Don't redo hours of work because an important file or disk gets damaged. **1st Aid** puts an end to worries about data loss. Saving one critical file will more than pay for the cost of your **1st Aid Kit.**

Easy for beginners, powerful for experts
The easy to use Kit contains everything you need to save data from unreadable disks and deleted or damaged files. It includes:

+ File recovery software
+ Complete analysis and cross-referencing of Macintosh™ error messages
+ Step-by-step instructions
+ Tutorials with actual damaged files
+ Works on 128K, 512K, and MacXL Upgrades for Mac+ soon for a nominal charge

Introductory Special

Available Direct Order Only
1-800-THE-FIXR
MA **617-847-4190**
VISA MC

4 Disk Kit
$89.95
Plus shipping & handling. Mass. Residents add 5%

Not Copy Protected
Macintosh is a trademark of Apple Computer, Inc. 1st Aid Kit is a trademark of 1st Aid Software, Inc.

1st Aid Software, Inc.
42 Radnor Road, Boston, Mass. 02135

Circle 579 on reader service card

innards was to many people a terrifying concept. GCC had to convince them that damnation would not be theirs if they bought HyperDrives. Since, for many, damnation was preferable to disk-swapping, GCC succeeded.

But the big movement came with memory boards. Apple originally charged $1000 to upgrade from 128K to 512K. (Even now, upgrading costs a pricey $449.) This price was so high that people figured taking a chance on a low-price, outlaw upgrade was worth the risk.

"When we started, the prevailing mentality was that an Apple dealer could open it up [for service or a motherboard switch], but no one else could," says Doug Gilbert, a vice president at Levco, a company built on the premise of the liberated Mac. In true hacker spirit, Gilbert and two friends had opened their Mac ("the first one sold in southern California") on the day they bought it, seeing where things hooked up, pulling chips out, and experimenting. They figured out how to add memory to the motherboard and decided to go into business.

Levco's booth at the January 1985 Macworld Expo offered upgrades, but at first no one dared take the step. Then, one brave officer of a user group took the plunge. His upgrade attempt was successful, the owner told his friends, and the dam burst. "We spent all night long doing upgrades in out hotel room," Greene recalls, and now Levco is a force in the market.

Still, opening the Mac was an act reserved for only the daring until about a year ago. "Two things happened to open things up," explains Steve Edelman, president of DataFrame, a company that includes memory upgrades and SCSI ports among its products. "First was the clip—a device that goes around the 68000 microprocessor and accesses it without soldering. A dealer can now easily attach something to the motherboard. Then came the Mac Plus. With it came a SCSI port, which invited new hardware products. And the Plus had something called SIMMs."

SIMMs work like slots; you simply plug in circuit boards that carry memory chips. Any company that has figured out how SIMMs work can make a product to boost the memory of a Mac Plus—a product that can be installed as easily as putting a plug into an electrical socket.

Of course, this requires unauthorized opening of the machine. But now, the previously unthinkable is fairly common. So,

(continues)

Peripheral Land, the SCSI Experts



*RANKED #1 IN SEPT. ISSUE OF *MacUser*

*" THE PERIPHERAL LAND DISK SATIFIES BOTH THE PRICE-CONSCIOUS AND THE SECURITY -CONSCIOUS USER'

Macworld **Sept. issue.**

* BACK-UP PROGRAM TO BACKUP THE HARD DISK TO FLOPPIES BY FILE, FOLDER, VOLUME, OR INCREMENTAL FILES.
* IT ALSO COMES WITH A COMPLETE SET OF FLEXIBLE UTILITIES TO FORMAT AND PARK THE DRIVE.
* ALL PERIPHERAL LAND HARD DISK DRIVES RUN AS A SINGLE HFS VOLUME, OR CAN SUPPORT HFS AND MFS VOLUMES SIMULTANEOUSLY WHEN FORMATTED.
* ALL UNITS COME WITH FULL YEAR WARRANTY.

PL SERIES SCSI HARD DISK

These are the fastest SCSI hard disks available for Macintosh Plus or Macintosh 512. The main features include plated media hard disks for long reliable use, which are 100 times harder than oxide media. The PL hard disk auto-boots either from the Macintosh Plus or the Macintosh 512/E with our Macport Plus.

PL 20, 21meg formatted drive/**PL 30,** 32meg formatted drive/**PL 80,** 80meg unformatted drive/**PL 172,** 172meg unformatted drive.

MacBack Plus SCSI TAPE BACK-UP

Say goodbye to floppies and hello to 22 megabyte tape cartridges. The MacBack Plus can either back-up or restore 20 megabytes in minutes. The back-up criteria can be selected by file, folder, volume, or incremental files. The MacBack Plus is available in either 22 or 60 megabytes of awesome capacities.

MacBack Plus 20/MacBack Plus 60

The MacFast
High performance Series SCSI Hard Disk

The MacFast SCSI series is our top of the line hard disk for the ultimate Macintosh power user who demands speed from the hard disk. What makes the MacFast hard disk superior? An 8k buffer used for caching that maximizes raw data transfer on the SCSI bus to its fullest potential. A Turbo-Stream intelligent disk/tape controller that has its own Zilog Z-8 micro processor with DMA that optimizes data transfer at a phenomenal 5 megabytes nonstop per minute between the MacFast disk and MacBack tape unit.



MacFast 20, Formatted/**MacFast 30** Formatted **MacFast 80,** unformatted/**MacFast 172,** unformatted

MacBack
(QIC-02) High-performance Tape Back-up Unit

Our companion tape back-up system for the MacFast. Our exclusive Turbo-Stream Technique has the ability to back-up and restore 20 megabytes of data in a blistering 4 minutes. In the 5 megabyte volume mode, MacBack will back-up or restore in exactly one minute, incredible but true. This is the fastest tape back-up unit available today for the Macintosh.

MacBack 20/MacBack 60

MACSTOR Series

a 10 or 15 megabyte removable SCSI hard disk subsystem for the Macintosh Plus and the Macintosh 512K. This reliable removable Winchester cartridge provides unlimited capacity while providing complete data security. It can also be used as a back-up device instead of a tape. MACSTOR, When security and unlimited capacity is a must.

MACSTOR 10 a 10meg removable drive.
MACSTOR 15 a 15meg removable drive.

MACPORT Plus Auto-booting SCSI Adaptor for the Macintosh 512 and 512/E

Here's where Peripheral Land expertise really shines. An auto-booting SCSI adaptor for the Macintosh 512 or 512/E requires the new 128k rom. This easy, convenient upgrade provides full SCSI compatibility with our hard disk or any other SCSI hard disk. Now, you can boot directly from the hard disk, just like the Macintosh Plus without the expensive price tag

Macintosh Plus, Macintosh 512, and Macintosh 512/E are trademarks of Apple Computer, Inc.

THE SCSI EXPERTS
PERIPHERAL LAND

Peripheral Land
3677 Enochs Street
Santa Clara, CA 95051
(408) 733-7600

Circle 509 on reader service card

"Can w

Absolutely.

For the first time, a PC and a Macintosh™ can really talk together. Simply, transparently, reliably.

It's done with TOPS,® the easiest to learn, easiest to operate Local Area Network yet designed. You can now access Lotus 1-2-3™ files located on a PC, for example, and modify them on your Macintosh under MicroSoft™ Excel.™

With TOPS you can have three Local Area Networks in one. Macintoshes can talk to Macintoshes, PCs can talk to PCs and PCs can talk to Macintoshes. All of these computers can be connected on the same LAN, sharing databases, text files, connecting up parts of your office that until now were barely on speaking terms.

Installation is quick and straightforward—less than four minutes for a Macintosh, fifteen minutes for a PC.

It's all done so easily and success-



e talk?"

ully that within the first month TOPS vas available, it was already installed n over 100 Fortune 500 companies.

This talk is also remarkably heap. TOPS is $149 per Macintosh, 389 per PC.

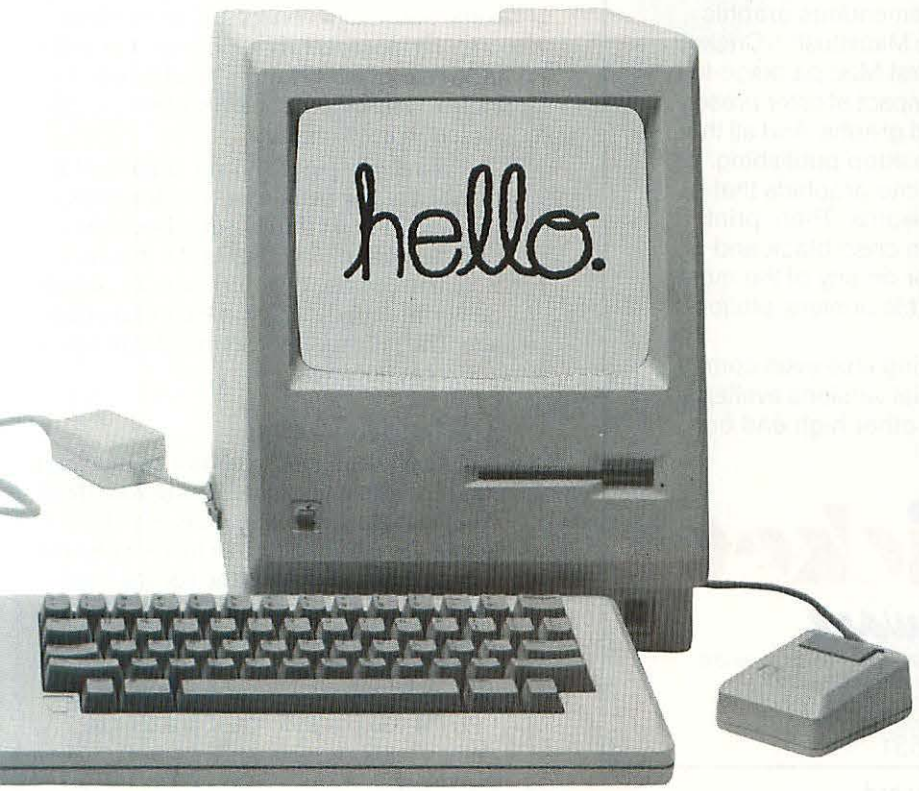
As if that weren't enough good ews, we are pleased to also announce one of this year's major advances in desktop publishing. Now, using TOPS PRINT™ you can have all your PCs share Apple's LaserWriter.™

TOPS and TOPS PRINT are available at Businessland and other fine computer dealers. For the dealer nearest you, call 800-222-TOPS (in California call 800-445-TOPS).

And we'll do just what a Macintosh and a PC can now do. Talk.

TOPS®
Network

Visit our Macworld Expo Booth #102

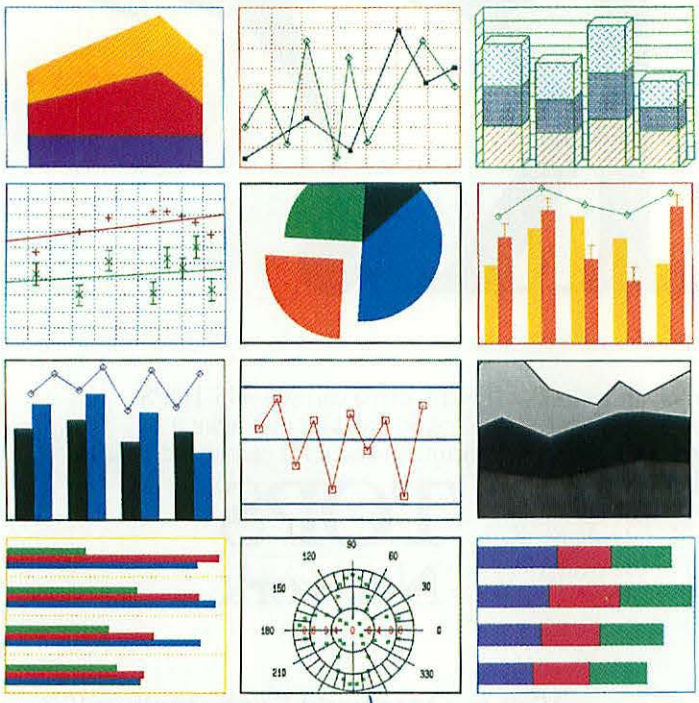


Centram
2560 Ninth St., Berkeley, CA 94710

OPS is a registered trademark and TOPS PRINT is a trademark of Centram Systems West, Inc.
ll other product names are trademarks of their manufacturers.

Circle 524 on reader service card

If your Mac can't graph like this, it's not quite Cricket.



Cricket Graph

• Get the **12** most popular business/scientific charts and graphs in **one package** • Plot **2000** data points per series. (95% more than any other Mac graphic package) • Full color and **3-D** capability • Position up to **10 graphs** on a single page • Page layout for **desktop publishing** merges graphics with text

Only one software package arms business and science with the tremendous graphic power of the Macintosh™. Cricket Graph. The first Mac package to deliver all the impact of color presentation charts and graphs. And all the possibilities of desktop publishing.

Transform data into graphics that speak louder than words. Then, print your creations out in crisp black and white or brilliant color on any of the most popular Mac-compatible printers, plotters and film recorders.

Cricket Graph. Nothing else even comes close. Just $195. Special versions available for film recorders and other high end output devices.

Requires 512K Macintosh with two disk drives, or Mac Plus with one internal drive.

Macintosh is a trademark of Apple Computer Inc.

Charts printed on LaserWriter™, Hewlett Packard Color Pro™, and ImageWriter II.™

cricket software

3508 Market Street, Suite 206
Philadelphia, PA 19104
(215) 387-7955
1-800-345-8112

See Us at Macworld Expo Booth #1531

Circle 384 on reader service card

like other laws recognized mainly in the breach, the authority of Apple's ban on hardware incursion has diminished. "The issue is respectability," says Steve Edelman. "Now opening the machine is not only respectable, it's considered good common sense."

Do-It-Yourself Brain Surgery

Most often, the act itself is performed by a dealer or technician. But as more people become comfortable with the concept of opening the Mac, some companies are selling the idea that just plain users—even those fairly unsophisticated at computer tinkering—can do their own installations.

One such company is Human Touch, which includes an installation kit with its coprocessor boards. The kit consists of a long-handled hex wrench for unhooking the hard-to-reach screws under the Mac's hand grip and a 1½-inch putty knife (brand-named the Red Devil) for prying open the case after the five screws are removed. Then it's a matter of clipping, snapping, and screwing on a circuit board and a small fan.

"You don't need to be a technical wizard or electrician," says Gerry Grossman, an officer of Human Touch. "The most difficult thing to do is split open the security hole. And you don't have to worry about doing something you can't undo." Before releasing its products, Human Touch asked some nonwizards on its staff to try them out. "I'm not a technical person—I'm an English major," says Human Touch's Suze Di Pietro. "I installed a board without any instruction in 15 minutes."

Some people still come unhinged at the idea of just plain users cracking open the Mac. "I don't think users should be putting stuff in," says SuperMac's Steve Edelman (whose own products are strictly dealer-installed). "It's too easy to do damage. The only tools a user needs are a pen and a credit card."

Apple Relents—A Bit

It has not escaped Apple's notice that thousands of Mac owners are voting with their credit cards—and in some cases, putty knives—to equip their machines with unauthorized hardware. For the record, company policy is unchanged. "Any product that makes a physical alteration to the Mac voids the warranty," says Ed Colby, the Apple product manager for the Macintosh CPU. "If you put in a screw, solder, cut,

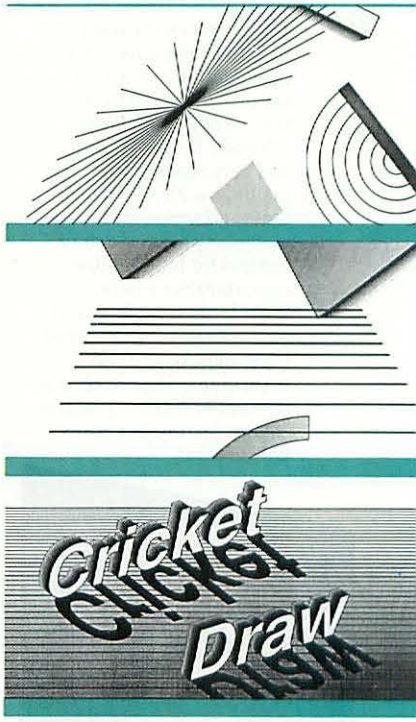
(continues)

DRAW PERFECTED

INTRODUCING

CRICKET DRAW

Draw has been around as long as the Macintosh. It took Cricket Software to perfect it. Finally, the Mac's graphics capabilities can truly be realized with Cricket Draw, the revolutionary new draw program from Cricket Software.



UNPRECEDENTED FEATURES

The kind of features you only dreamed possible, such as full rotation and tilting of any object, controlled shadowing, shading with a gray scale (0-100%), fountains (graded tints), starbursts, grates, bezier curves and much, much more. And with an Imagewriter II printer you can see it all in dazzling color.

UNMATCHED TEXT MANIPULATION

Special effects with text are Cricket Draw's forte. Place text on any arbitrary path; rotate, tilt, shadow, shade — YOU NAME IT!

PRECISE CONTROL

Precision drawings? How about vertical and horizontal rulers with your choice of inches, centimeters, picas or pixels? Also, you can show the measurements of any object, precisely align objects using grids or guidelines, zoom-in, zoom-out — Cricket Draw has it ALL.

A POSTSCRIPT CODE GENERATOR

High quality graphics output on a laser printer requires knowledge of PostScript. Cricket Draw is actually a PostScript code generator. It does all the work. You never have to come in contact with PostScript, UNLESS you want to. Then you can access a PostScript window to edit or create your own code from scratch.

ADVANCE TO CRICKET DRAW

Your current draw program is simply obsolete, why not advance to Cricket Draw, just $295, available at local dealers everywhere.

cricket software

Anything Less Isn't Quite Cricket

Requires a 512K Enhanced Macintosh or a Macintosh Plus.

3508 Market Street, Suite 206
Philadelphia, PA 19104
(215) 387-7955 1-800-345-8112

See Us at Macworld Expo Booth #1531

Macintosh is a trademark of Apple Computer Inc.
Imagewriter II is a trademark of Apple Computer Inc.
PostScript is a trademark of ADOBE Systems, Inc.

Circle 384 on reader service card.

Choose from our Collection of Select Macintosh Products

The Icon Review
S H O W C A S E

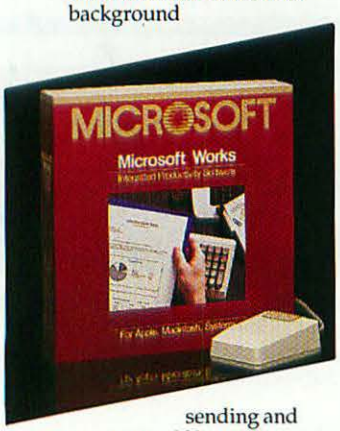
Works

From Microsoft Corp.

$179

Works gives you a word processor, database, spreadsheet with graphics, and communications program in one easy-to-use package. All tools are fully integrated and can be used side by side on the screen in any combination at any time — simply cut and paste for fast, complete analysis.

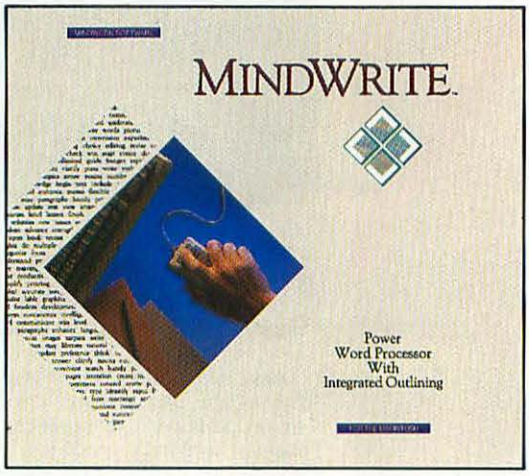
Prepare letters, reports, and personalized mass mailings with a variety of fonts and styles, automatic mail merging, and a drawing tool for highlighting important information. Include charts, tables, and numbers from your spreadsheet right where you want them. Then *send* your document with a communications feature that allows background



sending and receiving of files!

Complete and easy to use, Works integrates the most-needed software functions into one single program. Buy Works and get it all!

Requires 512K Enhanced or Mac Plus; modem needed to take advantage of communication capabilities



MindWrite $89

From MindWork Software

This powerful yet easy-to-use software offers outlining where you need it most — fully integrated within a powerful word processor. Other unique features include:

Multiple Windows — limited only by available memory • Auto-Numbering — watch MindWrite number and renumber document sections automatically • Drag Text — easier than cut and paste • Multiple Clipboard — accumulates ALL cuts and copies • Multiple Selection — to act on many elements simultaneously • File Conversion — reads MacWrite, ThinkTank, and Text Only files; writes MacWrite and Text Only files • Mark — track revisions easily with time and date stamping • Search — most extensive available • Word Count — counts characters, words, and paragraphs instantly.

Order MindWrite to add a dramatic new dimension to your Mac's word processing capabilities.

Requires 512K or Mac Plus; supports ImageWriter & LaserWriter

Cheetah 20 Quick Drive $699

Finally — a quality 20-meg hard disk that gives you the same reliable performance of more expensive drives for less! In fact, the Cheetah 20 Quick Drive contains the same quality components that Apple uses in their 20-meg SCSI drive. This means you are not sacrificing quality when you order this drive — all that's missing is a high markup.

The Cheetah's simple design keeps it running cool and quiet all day, while the 20 megabytes of space let you organize your files in one place. You get fast data access and easy setup with the SCSI interface, and the daisychain port allows you to connect up to seven SCSI devices to your Mac Plus. Order today and get the speed and capacity you need at a price you can afford!

Requires Mac Plus; SCSI cable included



Orders only

800/228-8910

In California

800/824-8175

MONDAY THRU FRIDAY 6 A.M. TO 8 P.M.
SATURDAYS 8 A.M. TO 4 P.M. (Pacific Time)

Order by mail:
P.O. Box 911, Dept. MW017 Monterey, CA 93942-911

Icon Review



disk•books

From MicroStore

MicroStore has added a new Traveller series to their popular disk storage line. All disk•books and Travellers are made of durable nylon, fasten securely with velcro closures, and have no pocket trim to catch disk shutters.

disk•book-10	**$14**
disk•book-32	**$22**
disk•book-Plus	**$22**
Traveller-4	**$ 5**
Traveller-8	**$ 7**
Traveller-12	**$ 9**

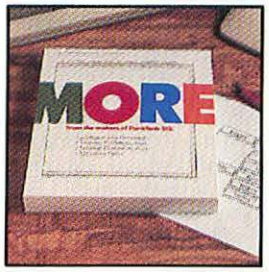
MORE

From Living Videotext

$169

MORE is unprecedented in its ability to create great presentation graphics by automatically generating bullet or tree charts from outlines. Outlining tools and installable templates make managing ideas a snap, while multiple windows and easy export to Word, PageMaker, Excel, and MacWrite add significantly to MORE's flexibility. Charts can be printed on paper or as transparencies for instant overhead slides.

Requires 512K or Mac Plus & external drive or hard disk



Fanny Mac

From Beck-Tech

$79

Fanny Mac's reliable surge suppressor protects your Mac from damaging



powerline spikes, while its fan keeps your Mac cool inside. Fanny Mac fits into your Mac's handle, installing in seconds; and its unique "pass through" power assembly means you need only one power socket for both your Mac and Fanny Mac. Research proves that Fanny Mac protects your Mac's circuitry on two fronts — order today!

Works w/any Mac

Accessories

Beck-Tech
Fanny Mac $79
Surge suppressor built in

Cables/Adapters
Mac Serial Extender $18
Mac to ImageWriter I $18
Mac to ImageWriter II or Apple Modem $18
Mac to modem $18
MacBuffer to ImageWriter II $18
Mac Plus to Mac Serial Adapter $19
Mac Plus to ImageWriter I $18
Mac Plus to ImageWriter II or Apple Modem $18
Mac Plus to MacBuffer $18
Mac Plus to modem $18
Mac Plus to SCSI (25 to 50 pin) $24
SCSI Daisychain $29
SCSI Extender (1 meter) $29
SCSI Extender (2 meters) $39
ThunderScan to IW II $18

Cambridge Automation
MacTurbo Touch $95
Numeric Turbo $109

Computer Accessories
PowerLine Strip $39
6 filtered outlets

Computer Friends
MacInker $44
Re-inks ImageWriter cartridges only—includes ink

Curtis—New
Diamond (6 outlets) $29
Emerald (6 outlets; 6 ft. cord) $36
Ruby (3 outlets) $55
Sapphire (6 outlets; 6 ft. cord) $47

Disk Holders/Storage ACCO
Disk Holder (holds 80) *NEW* $16

Eichner
Disk Holder (holds 60) $25
Disk Holder (holds 60) w/lock $33

MicroStore
disk•book-10 $14
disk•book-32 $22
disk•book-Plus $22
Traveller-4 *NEW* $5
Traveller-8 *NEW* $7
Traveller-12 *NEW* $9
Highest quality nylon disk carriers

Smith & Bellows
Mahogany Disk Case (holds 90) $28

Dust Covers
Mac 512K & Keyboard $15
Mac Plus & Keyboard $15
ImageWriter I—Wide $13
ImageWriter I—Standard $11
ImageWriter II $11
External Drive $7
LaserWriter $17

Ergotron
MacTilt $75
Swivel stand for Mac and 2nd drive

Hayden Publishing
Macintosh Advisor (book) $16

Honeywell/Disk Instruments
quadLYNX Trackball *NEW* $99

Icon Review
Disk Pak (holds 10) *NEW* $3
Head Cleaner $15
MacCracker $20
For qualified technicians only

I/O Designs
Printer Ribbons
• Black, 4-Pack $18
• Color, 4-Pack $19
Red, Yellow, Black, or Green
• One 4-Color (IWII) $12

Kensington
AppleTalk Cable Clips *NEW* $1
AppleTalk Connector Clip *NEW* $1
Control Center *SPECIAL* $62
Mouse Pocket *NEW* $8
Polarizing Filter *SPECIAL* $31
Surge Supressor $35
System Saver Mac *SPECIAL* $65
Quiet fan, surge suppressor & more!

Kurta
Penmouse+ $299

MacHelp Products
MacHELP Reference Cards $12
Cards perch on Mac or keyboard providing quick reference. Choose from Excel, Jazz, MacWrite/MacPaint, MultiPlan, Word. Be sure to specify program name & card style when ordering.

Mountain Equipment, Inc.
Mac or MacPlus Carry Bag $89
ImageWriter I or II Carry Bag $69

Mouse Systems
A+ Mouse $49
Optical tracking adds speed, dexterity

Moustrak
MousPad—7"x9" $8
MousPad—9"x11" $9

R.H. Electronics
Mac 'N Frost Fan $65

ScanCoFurn
MacTable 42 *NEW* $339
Beautiful ergonomic work table

Systems Control
MacGard $55

Tangent Technology
PC MacKey $119
Keyboard with function keys

Teac
20 Meg Tape Cartridge CT500 $19

Video Seven
MouseStick $29

X-10 Powerhouse
Computerize home or office for convenience and security
• Computer Interface *SPECIAL* $49
• Appliance Module $15
• Burglar Alarm Interface $26
• Lamp Module $15
• Manual Controller $9
• Thermostat Control $25
• Wall Switch $15

Diskettes

Sony DS/DD $25
Sony SS/DD $17

Icon Review is dedicated to supplying select Macintosh software, peripherals, and accessories; quick service; and discounted prices. Call toll free or order by mail.

Orders only
800/228-8910
In California
800/824-8175

CUSTOMER SERVICE 408/625-0465

MONDAY THRU FRIDAY 6 A.M. TO 8 P.M.
SATURDAYS 8 A.M. TO 4 P.M. (Pacific Time)

Order by mail:
P.O. Box 911, Dept. MW017
Monterey, CA 93942-911

OUR POLICIES

- We accept MasterCard and VISA with no added service charge. Private and company checks accepted; for faster delivery, send certified check, cashier's check, or money order.
- Sorry, we cannot accept C.O.D.'s.
- We accept corporate, government, and school purchase orders for a minimum of $300 from qualified institutions. Mail purchase orders to Icon Review P.O. Box 911, Dept. MW017, Monterey, CA 93942-911.
- California residents add 6% sales tax.
- All goods are new and guaranteed by the manufacturer to work, but we cannot guarantee machine compatibility. Due to software copyright laws, all sales are final. Defective products will be replaced; call 408/625-0465 to request a Return Authorization Number.
- Save time or save money. For ECONOMY, we ship UPS Ground ($5 min.). We recommend EXPRESS, our standard shipping method via Federal Express Standard Air ($10 min.). NEXT DAY service is also available via Federal Express Priority One ($25 min.). SPECIAL SHIPPING: Alaska, add 6% ($10 min.); Hawaii, add 10% ($15 min.); Canada, add 8% ($15 min.). FOREIGN ORDERS add 21% ($35 min.). All payments in U.S. dollars only.
- Call for shipping costs for large orders or hardware. Foreign orders subject to restrictions.
- Prices and availability subject to change.

Macintosh is a trademark licensed to Apple Computer, Inc. Icon Review is a division of MindWork Enterprises, Inc. MindWork and Icon Review are trademarks of MindWork Enterprises, Inc. • Icon Review, published by MindWork Enterprises, Inc. 6750 Mid Valley Center, Carmel, CA 93923 © 1986 MindWork Enterprises, Inc.

NATIONAL ACCOUNTS

Call today to find out how our National Accounts Program gives organizations like yours the benefit of **Icon Review's** unique brand of service and support. For more information, call **Brett LaSorella** at 408/625-1957.

Winter Catalog features more than 300 Mac Products

Icon Review is dedicated to supplying select Macintosh software and peripherals, quick service, and discounted prices. To receive your *FREE* catalog and advance notice of special sales, mail this coupon today!

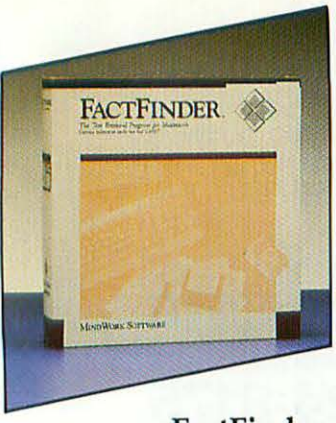
ICON REVIEW CATALOG
P.O. BOX 911 • Dept. MW017 • Monterey, CA 93942-911

Name _____

Company _____

City _____ State _____ Zip _____

Please allow 2-3 weeks for delivery



FactFinder
From MindWork Software

$49

FactFinder is a text-retrieval system that will store, organize, and cross-reference all your phone numbers, recipes, and miscellaneous notes. Enter information without defining fields or choosing formats. "FactSheets" you create can be retrieved later by name, by date created or last changed, or by keyword search. This program is an easy way to organize complex data — ideal for cross-referencing all kinds of information.

ThunderScan
From Thunderware

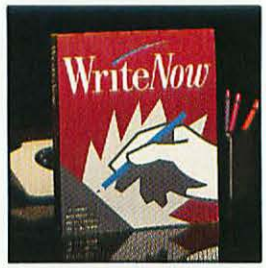
Turn your ImageWriter into an art digitizer with ThunderScan, which features an optical scanning device that takes the place of the ImageWriter's ribbon cartridge. Powerful and easy to use, ThunderScan creates documents with very high resolution — 200 dots/in. This is easily the most economical and popular digitizer available!
Works w/any ImageWriter; Mac Plus users need T'Scan Adapter Kit & printer cable (see line listings for T'Scan to IW II cable; cables for IW I and wide IW available from your Apple dealer)

ThunderScan $189
Adapter Kit $ 49



WriteNow for the Macintosh
From T/Maker Co.

$109



WriteNow combines power, speed, and ease of use in a word processor that can reformat and repaginate even large documents instantly. Other features include: multiple columns, unlimited footnotes, headers, and footers that can be seen and edited on screen; multiple windows; adjustable line spacing; soft hyphens; a background printing capability; and a built-in spelling checker. Send now for WriteNow!
Works on any Mac



Mirror 40/40
From Mirror Tech

$2595

The Mirror 40/40 SCSI Drive gives you 40 megs of hard-disk storage and 40 megs of tape backup. Sheer size makes this drive perfect for sharing among several users — even when their applications are huge. And backups are so easy that you can depend on your data being there when you need it. MacServe networking software (a $250 value) is included free. You chose the Mac for its potential, choose a Mirror 40/40 to realize that potential.
Requires Mac Plus; SCSI cable included

Hard Disk Partition/ Backup/Utility
From FWB Software

A hard-disk's speed is measured by the time it spends finding data on the disk. Hard Disk Partition accelerates performance because it limits the spread of file fragments as data is successively written to and erased from your hard disk. Hard Disk Backup is a speedy way to protect data by saving your files to floppy disks. Hard Disk Utility lets you load even copy-protected software to your hard disk.
All are Mac Plus compatible

Partition $39
Backup $39
Utility $57



Target Software
MacLightning $53
• Legal Dictionary $53
• Medical Dictionary $53
• Thesaurus $29
Voila *Desk accessory outliner* $59

Telos
Business Filevision $199
Visual access to information

Think Technologies
LightspeedC *SPECIAL* $129
Lightspeed Pascal *SPECIAL* $89

True Basic, Inc.
True Basic 1.2 *NEW* $89
Algebra Utility *NEW* $36
3D Graphics Library *NEW* $36
Requires True Basic 1.2
True Stat Utility *NEW* $36

T/Maker
ClickArt Business Image *NEW* $29
ClickArt Effects $29
ClickArt Holidays $29
ClickArt LaserLetters *EACH* $47
• Bombay, Plymouth, or Seville
ClickArt Letters $29
ClickArt Letters/2 *NEW* $29
ClickArt Personal Graphics $29
ClickArt Publications $29
Clickon Worksheet $46
WriteNow for the Mac $109
Fast word processor

Education/ Entertainment

Broderbund
Ancient Art of War *SPECIAL* $27
Knights, Archers, Cowboys, and more!
Print Shop *NEW* $53

Davidson & Assoc
Speed Reader II $49

First Byte
First Shapes $32
KidTalk $39
MathTalk $39
SmoothTalker $49
Speller Bee $39

Great Wave
KidsTime *SPECIAL* $29

Infinity
Grand Slam Tennis $27
Requires 512K or Mac Plus

Microsoft
Flight Simulator *SPECIAL* $32

Mindscape
Balance of Power $30
ComicWorks $49
Sophisticated graphics tool

Practical Computer Applications
MacGolf *SPECIAL* $36
Requires 512K or Mac Plus

QED Information Systems
Typing Made Easy $36
Improve your typing skills

Qware, Inc.
OrbQuest $27

Rubicon
Dinner at Eight *SPECIAL* $32
Silver Palate Collection $29
Requires Dinner at Eight

Silicon Beach
Dark Castle $29
World Builder *NEW* $45
Create your own games

Spectrum HoloByte
Orbiter *SPECIAL* $27

Communications

CompuServe
Starter Kit *SPECIAL* $25

Data Viz
MacLink Plus w/cable $159
File transfer IBM to Mac; new version does more

Farralon
PhoneNet for 128/512K *NEW* $39
Connects Mac 128/512, LaserWriter, or AppleTalk devices
PhoneNet for Mac Plus *NEW* $39
Connects Mac Plus or ImageWriter to Network
Phone Net/AppleTalk Adapter $36

Hayes
Smartmodem 1200 *SPECIAL* $399
Smartmodem 2400 *SPECIAL* $629
Smartmodem Bundle $449
SmartCom II *SPECIAL* $89

Infosphere
MacServe (per server) $250
Hard disk partitioner, network disk server, print spooler & more!

Software Ventures
MicroPhone *SPECIAL* $65
Best communications software

Think Technologies
InBox Personal Connection $65
Software & manual for 1 additional user
InBox Starter Kit $219
Software & manuals for 1 server and 3 users

USRobotics
Courier 1200 Modem $249
Courier 2400 Modem $499
Direct 1200 Modem *NEW* $119
Hayes compatible—Super value!

Hardware

Cuesta
Datasaver—90 watt *SPECIAL* $279
Datasaver—200 watt $399
Datasaver—400 watt $529
Protection from power blackouts

Dayna
MacCharlie Plus 256K Single Drive *NEW* $699
MacCharlie Plus 640K Dual Drive *NEW* $799
Runs IBM software on Mac

Ergotron
MacBuffer 256K $259
MacBuffer 512K $389
MacBuffer 1024K (1MB) $569
Save time while printing on ImageWriter

Hayes
Transet 1000—128K $299
Transet 1000—512K $399
Transet 1000 Accessory Kit $29

Koala
MacVision $175

MacMemory, Inc.
MaxPlus *SPECIAL* $349
—Upgrade your Mac Plus memory to 2 meg. Plugs into standard SIMM sockets; includes MaxChill fan, MaxRAM/MaxPrint. ***Requires installation by technician.***

Radius
Radius Full Page Display $1995
Large screen monitor displays an 8-1/2" x 11" page at actual size. ***Requires upgrade of Mac by manufacturer.***

Summagraphics
MacTablet—6"x9" $329
MacTablet—12"x12" $449
Precision drawing and tracing

Thunderware
ThunderScan $189
Mac Plus Adapter Kit $49
Adapter & cable for Mac Plus; purchase printer cable separately

Disk Drives

AST
AST 2000 $2195
20 Meg Winchester; 20 meg tape backup
AST 4000 $4900
74 Meg Winchester; 60 meg tape backup

Ehman Engineering
800K External *SPECIAL* $229
20 Meg SCSI *NEW* $849

Iomega
Bernoulli Box for Mac Plus
• 10 Meg SCSI Drive *SPECIAL* $1399
• 10+10 Dual SCSI Drive *SPECIAL* $1995
• 20 Meg SCSI Drive $1899
• 20+20 Dual SCSI Drive $2699
Cartridges
• 10 Meg (3 Pack) *SPECIAL* $155
• 20 Meg (3 Pack) *SPECIAL* $199
Cleaning Kit $75
SPECIAL PURCHASE!
• Bernoulli 5 Meg Serial Drive $499
• 5 Meg Cartridges (3 Pack) $99
• Cheetah 20 Quick Drive $699
Quality Rodime components at special price

Micah
Micah Drive XT30 SCSI *SPECIAL* $899

Mirror Technologies
MagNet 30x—SCSI $999
MagNet 30x w/ MacServe $1049
Mirror 800K External Drive $229
Mirror 20 Tape Backup $949
Mirror 40/40 $2595

PCPC
MacBottom 20 Meg SCSI $899
MacBottom 20 Meg Serial $899

Peripheral Land
PL20 Meg SCSI $CALL
PL30 Meg SCSI $CALL
PL50 Meg SCSI $CALL
PL80 Meg SCSI $CALL
MacBack 20 Plus Tape Back-up $CALL
MacBack 60 Plus Tape Back-up $CALL

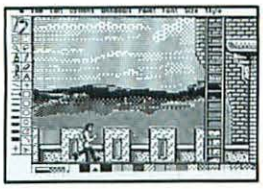
ProAPP
20 Meg Drive $849
For any Mac; specify type when ordering
40S Drive *NEW* $CALL
Incredibly fast!

Western Computer
Big Mack TwinPack *NEW* $1599
20 meg disk with tape backup

P.O. Box 911 • Dept. MW017
Monterey, CA 93942-911

In California
800/824-8175

Circle 272 on reader service card.



SuperPaint

From Silicon Beach

$55

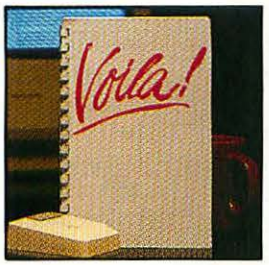
SuperPaint combines the capabilities of MacPaint and MacDraw, *and* adds exciting new features. Use bit-map and object-oriented options in the same drawing, draft 8x10 documents, and enjoy automatic scrolling with pictures that exceed screen size. Choose three levels of magnification, rectangle and circle expansion, full-screen text editing, and 300 dots/inch bit-map graphics with LaserBits. Make great-looking graphics with SuperPaint!
Requires 512K, Mac Plus, or Mac XL

Voila!

From Target Software

$59

Voila! is a full-featured desk accessory outliner that can be accessed from any program! Turn any document created with your word processor into an outline, and edit, expand, or print outlines easily. Voila! gives you complete sorting and search capabilities, control over fonts and type styles, resizable windows, and 256 headline levels. You can even generate a table of contents and paste in pictures from graphics programs. Make the most of your outlines with Voila!
Requires 512K or Mac Plus; supports LaserWriter

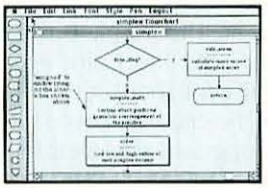


MacFlow

From Mainstay

$79

Use your Macintosh as a tool to draw flowcharts, organization charts, and logic trees. Engineers, project leaders, anyone who needs to show order



will appreciate MacFlow, which is easier for charting than MacDraw. Change a box's size, and MacFlow fits your text into it; move or resize a box, and it maintains all the connections; use *hide* and *zoom* to simplify hierarchy or show detail. MacFlow makes it easy to visualize dynamic interrelationships.
Requires 512K or Mac Plus; supports LaserWriter



5-Meg Bernoulli Box

$499 From Iomega

Now's your chance to purchase a Bernoulli Box with an original retail value of $1,495 at a one-time low price! This 5-meg serial drive boasts the same unlimited storage and unrivaled security of the larger drives and works with a 512K or Mac Plus. It's 3 to 5 times faster than a floppy drive, gives you room to organize all your files in one place, and the printer port lets you use up to 1 meg of the disk as a printer buffer. Comes with a backup utility and sets up in minutes.
Requires 512K or Mac Plus & 5-meg cartridges ($99 for 3)

ReadySetGo! 3

From Manhattan Graphics

$169

The totally redesigned ReadySetGo! promises the best combination of professional features and ease of use for desktop publishing. Sophisticated capabilities such as integrated word processing, kerning, letter spacing, and automatic hyphenation take you to the forefront of the personal publishing revolution. Order today and find out how easy professional desktop publishing can be!
Requires 512K or Mac Plus; supports ImageWriter, LaserWriter, Linotron 100 & 300 typesetters, or other PostScript devices



Software

Abvent
MacSpace $249

Affinity Microsystems
Tempo *SPECIAL* $59
Powerful macros with logic branching

ALP Systems
MacProof 2.0 *NEW* $109
Checks spelling, punctuation, and usage; 93,000-word dictionary

Altsys
FONTastic Font Editor $27

Ann Arbor
FullPaint *SPECIAL* $55

Ashton Tate
dBASE Mac *NEW* $325
Reads dBASE II and III files

Batteries Included
Battery Pak $27

Blyth Software
Omnis 3 Plus *SPECIAL* $289
Omnis 3 Plus Multi-User $629
Powerful relational database

Borland
Reflex *SPECIAL* $59
Interactive database with many display formats
SideKick with PhoneLink $59
Desk/phone/schedule organizer; dials too!
Turbo Pascal *NEW* $66

Casady Company
Fluent Fonts $29
Fluent Laser Fonts *each* $49
Six font selections to choose from

Central Point Software
Copy II Mac $20
Includes hard disk install

Challenger Software
Mac3D 2.0 $129
Pro3D *NEW* $249

Chang Labs
Rags to Riches
- Accounts Payable $119
- Accounts Receivable $119
- General Ledger $119
- 3-Pack (A/R, A/P, G/L) $299
- Inventory $229
- Inventory Special $49

When bought w/3-pack only; thru 1-31-87

- Professional Billing $229
- Prof. Billing Special $49

When bought w/3-pack only; thru 1-31-87

Cognitive Concepts
MacFill-In $29
Preformatted business forms

Cortland
TopDesk *SPECIAL* $35
Seven desk accessories

Creighton Development
MacSpell + for 512K $59

Cricket Software
Cricket Draw *NEW* $179
Powerful object-oriented drawing program w/text-editing abilities
Cricket Graph $129
Plots 20 more data points than Excel
StatWorks $79
Great value with best statistical graphs

Desktop Graphics
DrawArt $29
DrawForms $30
Requires MacDraw
MacForms $42
Requires MacPaint

Electronic Publisher
MacMatbook/Vols. 1-3 $69
MacMatbook/Vols. 4-6 *NEW* $69
Indexed clip art; requires PictureBase

Enabling Technologies
Easy3D $89

Execucom
MindSight $179
Business planning and decision analysis

Forethought
FileMaker Plus *SPECIAL* $179
New and improved version

FWB Software
Hard Disk Backup $39
Hard Disk Partition *NEW* $39
Hard Disk Utility *SPECIAL* $57

Greene, Johnson Inc.
Spellswell $45
Catches capitalization & homonym errors

Ideaform
MacLabeler 2.2 $29

Industrial Computations
PowerMath $69

Infosphere
LaserServe (per user) $125

Innovative Data Design
MacDraft 1.2 *SPECIAL* $139
Most powerful drafting tool for the Mac

I/O Designs
ColorChart $32
ColorPrint $25

Kent Marsh
MacSafe *SPECIAL* $49
Sold in USA only

Kette Group
MacNifty Studio Session $69

Layered
Notes . . . *EACH* $42
Available for Excel, Jazz, PageMaker, or Works

Legisoft/Nolo
WillWriter *SPECIAL* $27

Living Videotext
MORE $169
Outlining with presentation graphics
ThinkTank 512 *SPECIAL* $99

MacAmerica
LaserSpool *NEW* $79

MacMaster Systems
Fedit Plus $32
File recovery tool for the Mac Plus

MacMemory, Inc.
MaxRAM/MaxPrint $33
Save time with RAM disk and print spooler

Magnum
Slide Show Magician 1.3 $39

Mainstay
MacFlow *NEW* $79
Create flowcharts & logic trees easily

Manhattan Graphics
ReadySetGo 3 *NEW* $169
Major upgrade

Micro Analyst
Mac Zap $39
Hacker's disk utility and more!

Micro Planning
Micro Planner Plus $329
Enhanced version, requires 512K

Microsoft
Basic 3.0 *NEW* $69
Chart $75
Excel 1.0 *SPECIAL* $225
File $112
Fortran 2.1 $169
Multiplan $107
Word *SPECIAL* $111
Works $179

Mindscape
GraphicWorks *SPECIAL* $49

MindWork Software
FactFinder $49
MindWrite 1.0 *NEW* $89
Powerful new word processor with integrated outlining!

Monogram
Dollars and Sense $81
Forecast $41

Nevins Microsystems
TurboCharger 2.0 $39
Speedy disk cache; requires 512K or Mac Plus

New Canaan
Mac Disk Catalog II *SPECIAL* $32

Odesta
Double Helix *SPECIAL* $279
Helix 2.0 $125
Powerful databases require 512K or Mac Plus

Orange Micro
Ragtime *NEW* $249
Page layout with spreadsheet, word processor, and more!

PBI
HFS Locator Plus $27

PCPC
HFS Backup $29

Personal Bibliographic
Professional Bibliographic System
Simplifies creating/maintaining properly formatted bibliographies *SPECIAL* $199

ProVUE
OverVUE 2.0 $149
Fast, powerful, easy-to-use database
- Mail Manager Template $29
- Personal Finance Template $29

Silicon Beach
Accessory Pak #1 $21
Silicon Press $42
SuperPaint *SPECIAL* $55
Bit map and object graphics

Softstyle
Colormate *SPECIAL* $49
Colormate Art $29
Decision Map $75
Plotstart $79
Printworks $49

Software Discoveries, Inc.
Record Holder $49
A full-function file/data manager

Solutions
Glue *NEW* $39
Adds "print to disk" capability to most Mac applications

State-of-the-Art
Electric Checkbook *SPECIAL* $29

Symmetry
Acta $39
Desk accessory outliner
PictureBase $45

Orders only
800/228-8910

draw power, or alter the flow of air—that's a modification."

Yet Colby admits that Apple no longer regards these products with the stern wrath of the past. "There's been an evolution inside Apple," he says, tying this shift in attitude to "a greater appreciation for the desires of customers." Whereas before, he explains, Apple's attitude was, "No, you absolutely must not do this," now it's more like, "Well, if you want to do this, that's great, but you're on your own."

The first signal of Apple's change of heart was its grant of a warranty blessing to GCC's HyperDrive. At the time, no other mass storage device ran nearly as fast, and Apple needed to recommend the HyperDrive solution to its business customers. Then came the Mac Plus and its SIMMs. Apple's compromise was primarily a tacit admission that the closed-box approach wasn't working and that, whether Apple liked it or not, users were going to improve their Macs with internal modifications. So, Apple decided to like it. At least a little.

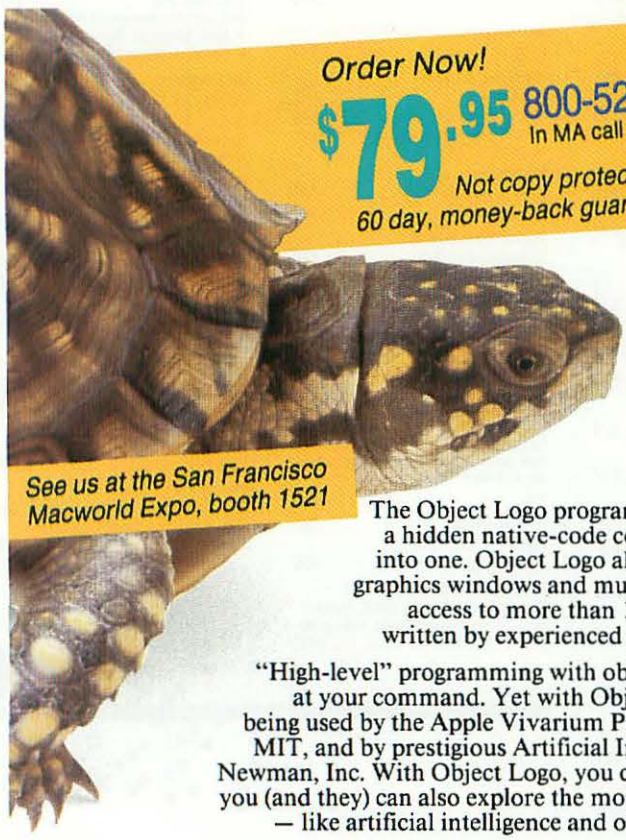
The corporate benediction almost went further than that. Last year Apple considered granting the outlaw hardware market an official blessing and ran some tests on certain products. The tests checked things like power consumption, heat, and vibration tolerance. The result, as it turned out, was not exactly what Levco, SuperMac, and the rest were waiting to hear. "The fact is that Macintosh in the current [1986] configuration does not lend itself to internal physical alteration," says Colby. "There may be an adverse impact on reliability with certain products."

Despite this, Apple isn't retreating to its earlier hard line. Colby even offers cautious praise for some of these products. For instance, he cites the Levco high-speed Prodigy upgrade as something that improves the Macintosh—and it couldn't be done without some internal modification. He also knows that products like Radius's full-page external monitor would not be workable without a warranty-voiding connection to the Mac's innards. He's happy that these devices exist to make the Mac more powerful.

Fortunately, as the outlaw hardware market grows, it becomes more established and experienced, and eventually loses some of the risky connotations that *outlaw* implies. Many companies making products that require internal modifications will supply their own warranties; many also are developing reputations for reliability. Some products use technologies that require no permanent alteration to the computer, and so if service or an official upgrade is required, the user can simply remove the offending part before presenting the Mac to an authorized dealer.

As Apple has come to recognize, the de facto opening of the "closed" Mac is a positive phenomenon. I would go farther and call it an inspiring phenomenon as well. The spirit of Macintosh has always paralleled the best of the computer dream: productivity and creativity accessible to all. So it is poetically justifiable as well as natural that the Mac community should use its ingenuity not only to get at the machine's innards but to learn to modify them to increase the power available to users. This whole episode is a testament to people's belief in the Macintosh. They liked the computer so much that they refused to accept that it had a closed architecture—and by pretending it was open, they made it so.

Can you imagine what that kind of enterprise will bring when we *really* get an open Mac? □



Coral Software introduces
Object Logo

A programming language like none before it.

Object Logo is a new programming language developed specifically for the Macintosh. Object Logo incorporates the symbolic processing power of LISP, full object-oriented programming capabilities and the most advanced math package ever put on a microcomputer in a proven, easy to learn educational programming environment. Object Logo — it's a rare blend of simplicity and sophistication.

The Object Logo programming environment features an editor with multiple windows, a debugger, and a hidden native-code compiler, so you get the advantages of both a compiler and an interpreter, rolled into one. Object Logo also improves on the graphics capabilities that made Logo famous with multiple graphics windows and multiple turtles, each implemented as customizable Object Logo objects, and with access to more than 100 Quickdraw commands. Sounds overwhelming? The Object Logo manual is written by experienced educators whose examples and comments will guide you every step of the way.

"High-level" programming with objects puts the full power of the Macintosh at your command. Yet with Object Logo, it's easy. Object Logo is already being used by the Apple Vivarium Project, by faculty and graduate students at MIT, and by prestigious Artificial Intelligence Labs such as Bolt Beranek and Newman, Inc. With Object Logo, you can still teach your students geometry, but you (and they) can also explore the most advanced concepts in computer science — like artificial intelligence and object-oriented programming — with ease!

Coral SOFTWARE

CODs and purchase orders WILL NOT be accepted by Coral Software. Price is suggested retail price and is subject to change without notice. Minimum system requirements for Object Logo: 512K Macintosh 800K disk drive or any external disk drive. Object Logo is a trademark of Coral Software Corp. Macintosh is a trademark licensed to Apple Computer, Inc.

Circle 611 on reader service card

"Online computing costs had me scared stiff..."



$10.00+ per hour

"With GEnie™ I found adventure online for less."



$5 per hour

Most online information networks can freeze your computing budget faster than you can say "Help!" Not so with GEnie, the General Electric Network for Information Exchange. As part of the world's largest commercially available teleprocessing network of General Electric Information Services Company, GEnie lets you experience all of the fun and excitement that online computing has to offer.

Evenings, weekends, holidays. Just $5 per hour.

With GEnie, you can make friends, set up travel reservations, get the news, be entertained, even shop for a fraction of what other information services charge.

And you get a lot more for your money.

With GEnie's Coffee MUG ***RoundTable™ Special Interest Group*** you can discuss the latest in Macintosh† products and accessories; download hundreds of public domain software programs, and participate in exciting and informative online conferences. And, uploads are FREE on GEnie! **There's more!**

Meet friends old and new with GEnie's ***LiveWire™ CB Simulator*** or exchange messages with GEnie's ***electronic mail*** service. Schedule a trip with ***American Airlines travel service.*** Fun and learning for the whole family with ***Grolier's electronic encyclopedia.*** Play multiplayer and classic games in GEnie's ***Game Room.*** Get the latest in domestic and international ***computing news.*** All this and there's more to come. New services are being added each and every month!

Only $18 to register! Save up to 60%!

Check out the chart. Compare the savings for yourself. You'll find GEnie delivers all of your favorite services for an incomparable price, at incomparable savings.

Compare & Save	Services						Pricing			
	Travel & Shopping	SIGs/User Groups	Electronic Mail	CB Simulator	News	Games	Registration Fee	Monthly Minimum	Non-prime time rates 300 baud	Non-prime time rates 1200 baud
The Source	X	X	X	no	X	X	$49.95	$10.00	$8.40	$10.80
CompuServe	X	X	X	X	X	X	$39.95	none	$6.00	$12.50
GEnie*	**X**	**X**	**X**	**X**	**X**	**X**	**$18.00**	**none**	**$5.00**	**$5.00**

**Rates and Services shown in effect 9/86. Non-prime time applies Mon.–Fri., 6pm–8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional surcharge applies for 2400 baud service.*

With services and savings like these, now you can discover the adventures of online computing without the fear of paralyzing high costs. Get online with GEnie. Sign up today!

Sign up from your keyboard today. 4 Easy Steps:

1. Have your Visa, MasterCard or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial **1-800-638-8369.** When connected, enter HHH
4. At the U# = prompt enter **XJM11920,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. Call **1-800-638-9636.**

GEnie™

Stay online longer, for less.

GE INFORMATION SERVICES

General Electric Information Services Company, USA

GEnie rates and services subject to change. Uploads are free during non-prime hours at 300 or 1200 baud. Third-party services offered on GEnie may include additional charges.

† Macintosh is a trademark licensed to Apple Computer, Inc.

Microsoft Excel. For those who

You may speak more softly now.

For we are delivering into the hands of business, a very big stick.

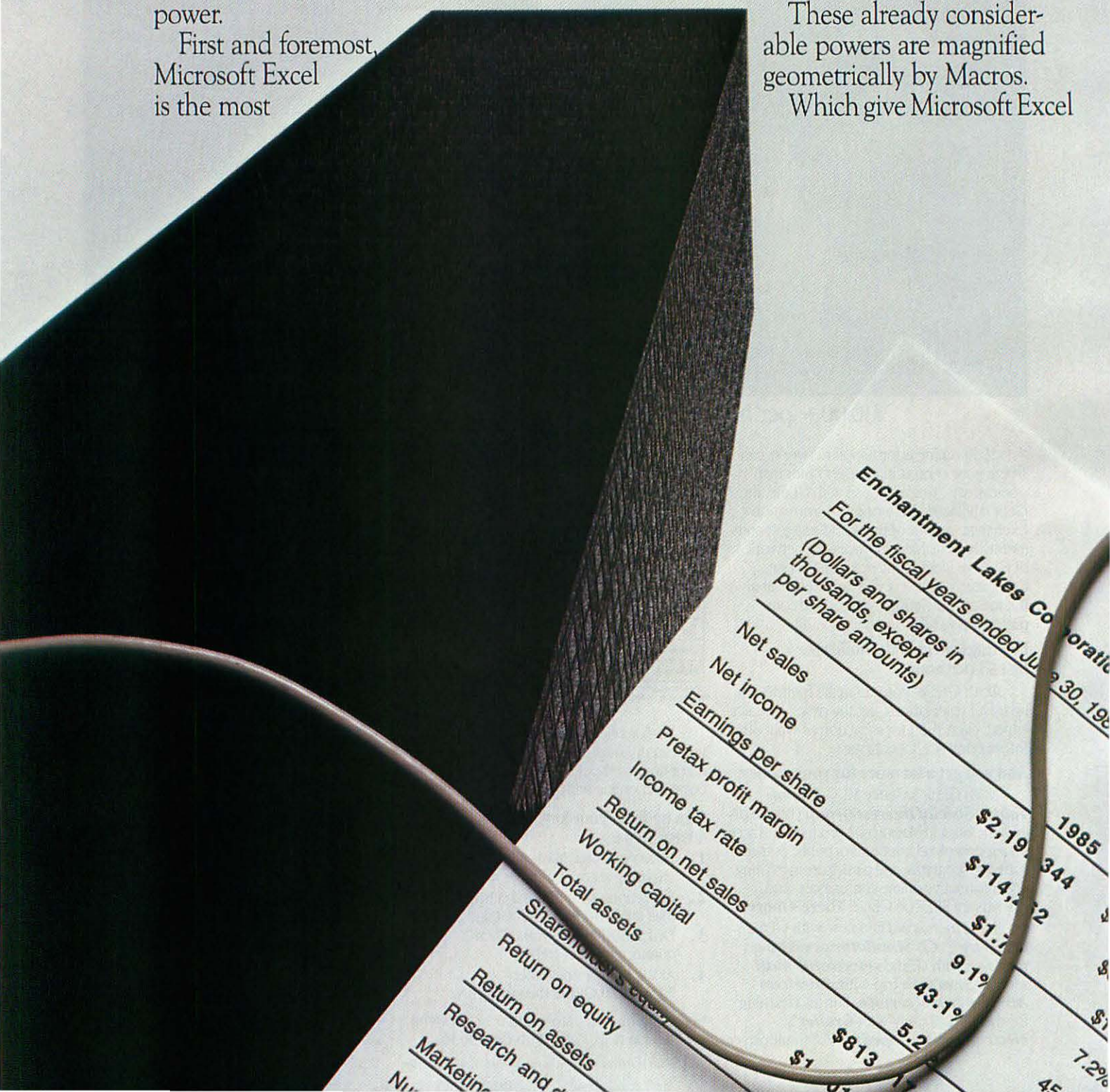
Microsoft® Excel for the Macintosh.™ A financial analysis tool of unprecedented power.

First and foremost, Microsoft Excel is the most formidable spreadsheet ever to run on a personal computer.

A spreadsheet which is in turn linked with an extraordinary graphics program and a highly capable data filing application.

These already considerable powers are magnified geometrically by Macros.

Which give Microsoft Excel



ppreciate the uses of power.

the capacity to learn your most complex routines. And activate them with a single keystroke.

Yet for all its ability, Microsoft Excel is simple to learn, simple to use. No complex commands to memorize. No classes to take. The only thing complicated about Microsoft Excel is the problems it can solve.

See your Microsoft dealer for a demonstration of the powers of Microsoft Excel.

In the right hands, a potent weapon, indeed, in the cause of commerce.

We trust you will use it responsibly.

Microsoft Excel

The rest are history.

For the name of the nearest Microsoft dealer, call (800) 426-9400. In Washington State and Alaska, (206) 882-8088. In Canada, call (416) 673-7638.

Microsoft is a registered trademark of Microsoft Corporation.
Macintosh is a trademark licensed to Apple Computer, Inc.





Introducing Certificate Maker.™

Because accomplishments deserve to be recognized.

Offer Congratulations! Say Thanks! Have Fun!

Giving someone a certificate is a wonderful way to recognize an outstanding achievement. It's also a perfect way to have a little fun.

Certificate Maker™ gives you **over 200 professionally designed certificates.** From strictly official to fun and witty, there's something for everyone and every occasion. So you can surprise a family member, praise a student, applaud an athlete and honor an employee with great looking certificates. And each one will be as personal, professional and special as you choose.



Personalized certificates in minutes.

Simply choose a certificate, select a border, type your message; add a date and signature… then print! It's that quick and that easy.

You can even create a name file and automatically personalize certificates for everyone in your class or club!



Over 200 exciting Certificates, Awards, Diplomas, and Licenses.

SPRINGBOARD

Available for Apple, IBM PC, Commodore, Macintosh • Springboard Software, Inc. • 7808 Creekridge Circle • Minneapolis, MN 55435 • (612) 944-3915

Circle 367 on reader service card

Macworld News

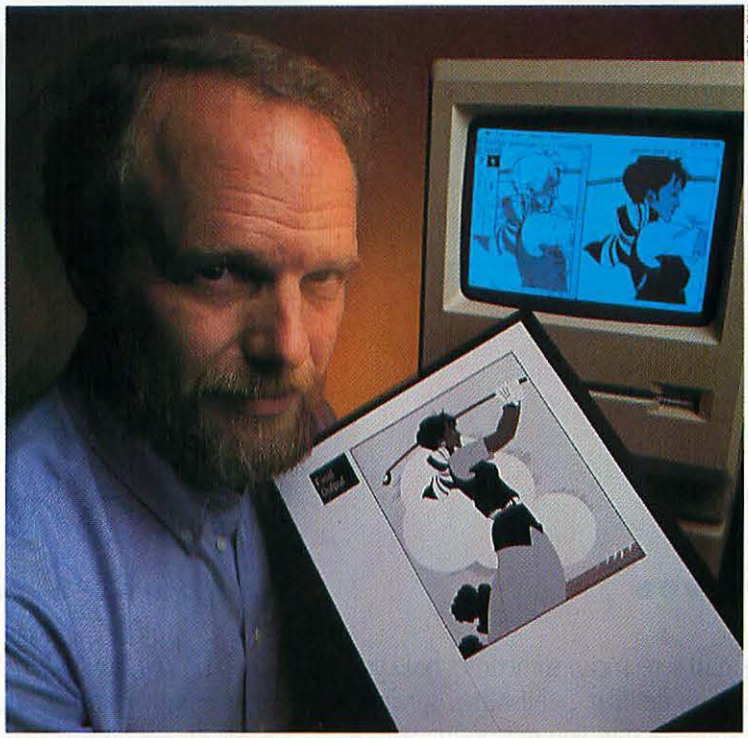
by Daniel Farber

The Illustrators' Magic Wand

Apple's LaserWriter and Adobe's PostScript page-description language introduced the world to low-cost, graphic-arts-quality output. But PostScript's full drawing capabilities have remained hidden to most users. Existing drawing programs don't quite satisfy the needs of professional illustrators. For example, *MacPaint*'s bit-mapped images are too rough for many architectural and medical applications, and programs like *MacDraw* that provide the precision of structured objects don't take advantage of the power and flexibility built into PostScript.

With the introduction of its new product, *Adobe Illustrator,* Adobe makes many of PostScript's unique drawing routines available to non-PostScript programmers for creating illustrations on the Macintosh. Designed primarily for professional and technical illustrators, and for graphic designers requiring precision line art, *Adobe Illustrator* lets you draw with PostScript quality on screen.

The program has two modes: drawing and preview. In the drawing mode you start with a bit-mapped image. For example, you can scan in rough sketches, import *MacDraw* files, or draw freehand. The bit map is used as a background template to build the structured PostScript drawing. Using a pen tool with the mouse, you trace the outline of the bit-mapped image. The resultant tracing represents the structured PostScript image.



ED KASHI

John Warnock, one of the creators of the PostScript language, shows off some of the flashy output created with Adobe Systems' new PostScript drawing program.

The tool palette includes functions for fills, gray levels, line weight, squares, circles, end joints (miter, round, or square), and rotating, mirroring, and skewing parts of a drawing. In addition, the program offers eight zoom levels for precise adjustment. And you can specify color (PostScript supports color) for doing color separations on the Linotronic or on a color PostScript printer when it becomes available.

The program's text options are designed for annotating drawings, rather than publication layout. You enter text in a dialog box and specify leading, font, font size, type style, and kerning. You can rotate and scale text, but cannot wrap it around images.

The Preview mode bypasses QuickDraw, using a subset of the internal PostScript routines to show images on screen; there's a noticeable difference because PostScript's line-drawing routines are three times faster than QuickDraw's. A text editor lets you edit the PostScript file, so you can add special effects that *Illustrator* can't handle on screen.

Illustrator drawings are stored as PostScript text files rather than Macintosh resource files, so they're compact and transportable to any computer or printer that reads PostScript. This will make the planned IBM PC version of the product fully compatible with the Mac version. Adobe is also publishing the file format so that other applications can import and export *Illustrator* drawings. Eventually, Adobe expects more specialized applications such as ad makeup systems to evolve from *Illustrator.* For more information contact Adobe, Inc., 1870 Embarcadero Rd. #100, Palo Alto, CA 94303, 415/852-0271.

Turnkey Desktop Publishing

Gestetner Corporation, a company having more than one hundred years of experience with mimeograph machines, has begun developing electronic publishing software and is also establishing itself as a systems integrator by installing and

(continues)



Idea... Ideal.

Your Mac has big ideas. But its small screen can sometimes hold you back. Hook up *The Big Picture*™ and get a huge desktop that's ideal for just about any application: desktop publishing, spreadsheets, engineering drawings, architectural renderings, musical compositions. And the Macintosh software that you're working with today already knows how to use *The Big Picture's* larger display.

More than just a full page. *The Big Picture's* 17″ display actually gives you 4½ times more usable desktop than your regular Mac screen. See an entire page in Pagemaker,™ vertically or horizontally. Or with a slight reduction, see two entire pages—and still be able to read the text.

Big picture, small footprint. Your Mac snuggles up perfectly with *The Big Picture,* while providing easy access to the internal drive and programmer's switch. And the 17″ by 21″ footprint leaves you lots of workspace.

Easy Installation. Dealer installation is done in minutes with "clip on" connectors—no drilling or soldering. Your Mac stays portable too. Just disconnect *The Big Picture* to use the Mac's built-in screen.

The Ideal Display for your Mac. See your E-Machines dealer and get *The Big Picture.*

THE BIG PICTURE™

E-Machines Inc.
7945 S.W. Mohawk Street
Tualatin, Oregon 97062
(503)692-6656

Apple, Macintosh, and Macintosh Plus are trademarks of Apple Computer Inc. Pagemaker is a trademark of Aldus Corp.
The Big Picture is a trademark of E-Machines Inc.

Circle 600 on reader service card

Turnkey Desktop Publishing (continued)

supporting turnkey desktop publishing systems. The applications–including *PageMaker, MacDraw, FullPaint, Formation,* and *Laser Express* (a print spooler)–are linked via a proprietary transfer utility, which allows you to quit one application and open another without returning to the Finder. *Formation* is a $395 forms-creation program that provides a *MacDraw*-like environment and features precision alignment, repeating elements, rulers and grids, a variety of line options, and full font and type-style capabilities. For more information, contact Gestetner at Executive Boulevard, Yonkers, NY 10703, 800/431-2455 or 914/969-1216 in New York.

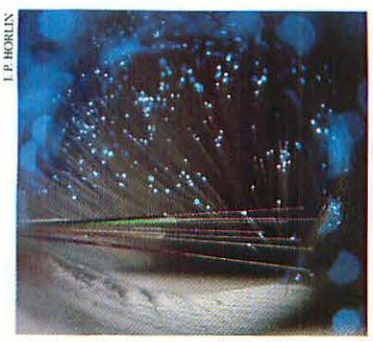
DuPont Fiber Optic AppleTalk

DuPont Connector Systems has designed a fiber optic network to replace standard AppleTalk cabling. This new product overcomes AppleTalk's 300-meter length limitation and will eventually allow users to send data 3 to 15 times faster.

DuPont's fiber optic connection box, like the standard AppleTalk box it replaces, connects to the Mac's printer or modem port. Two fiber optic lines link the Mac to the AppleTalk network. The fiber optic cable extends the maximum length between nodes to 1½ km, with no limit on total cable length. Although AppleTalk currently runs at 238.6K bits per second, DuPont is working on a version that transfers data at 600K bits per second using new Mac software and external clocking. Future versions of the product that connect to the SCSI port will allow AppleTalk to transfer data at 1½ to 3 megabits per second.

DuPont also has announced a fiber optic wiring concentrator to simplify AppleTalk office installations. One concentrator connects up to eight Macs in a star arrangement similar to AT&T's Starlan. Attaching two more concentrators expands the network further.

Fiber optic cable can be run from a concentrator mounted in a wiring closet to individual stations, where the cable terminates at a fiber optic wall plate. The network can be configured using a patch panel attached to the concentrator. Because the same cabling system works with both IBM and AppleTalk networks, multiple networks can coexist in the same building.–*David Ushijima*

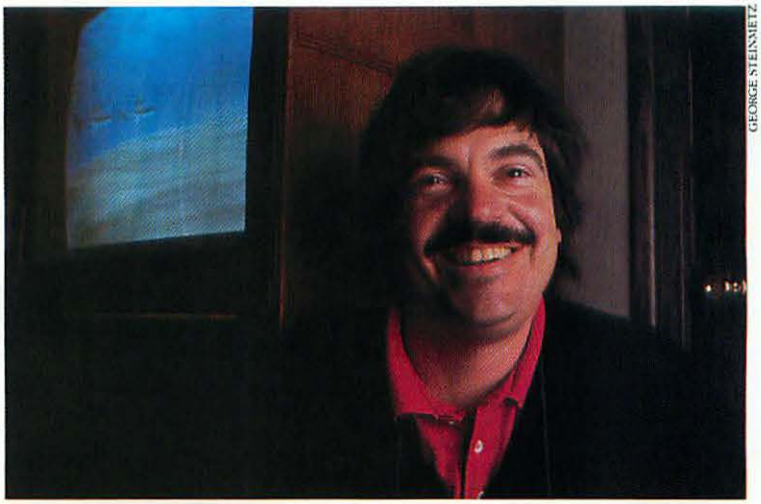


I.P. HORLIN

DuPont's fiber optic cabling extends the capabilities of AppleTalk.

Beyond Desktop Publishing

Alan Kay, one of the select brotherhood of Apple Fellows and seminal high-tech thinkers, has some interesting thoughts on desktop publishing–a term he objects to because it fails to describe accurately what he views as a revolution in the way people communicate. *Desktop,* Kay maintains, is reminiscent of people hunched over desks.



GEORGE STEINMETZ

Alan Kay believes that networks and dynamic "viewing environments" will take us the next step beyond desktop publishing.

"In Gutenberg's library, books were chained to the shelves. The idea of requiring someone to go to a library to read a book today is not much different. The destiny of media is to go with us." And *publishing,* Kay says, is equivalent to "freezing knowledge from its previously mobile form–a five-hundred-year-old embalming fluid for ideas."

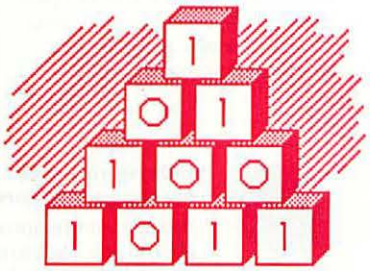
"A key question is, What does it mean to capture knowledge?" Kay observes. He believes that networking offers a dynamic way to capture information–to turn the burgeoning mass of data into knowledge.

In Kay's scenario for the future, much of the material we read will not be specifically addressed to us. While computers and networking provide a way to access a vast reservoir of information, he feels that electronic mail must evolve into a retrieval system capable of tapping all kinds of information sources.

To help eliminate the daily burden of logging on and exploring numerous on-line databases, Kay enlists the aid of *computer agents.* Such an agent can log on to information services and scan for material you want to read–based on a personal profile you provide to the computer–and monitor your electronic mail accordingly.

Kay also believes that the static model–capturing information on paper–will eventually be replaced by more dynamic models using real-time, 3-D animation.

But even if Kay's vision of electronic publishing–complete with color-animated environments–doesn't come to pass, it's likely that we are destined to spend more time reading dynamic electronic documents than static paper ones.

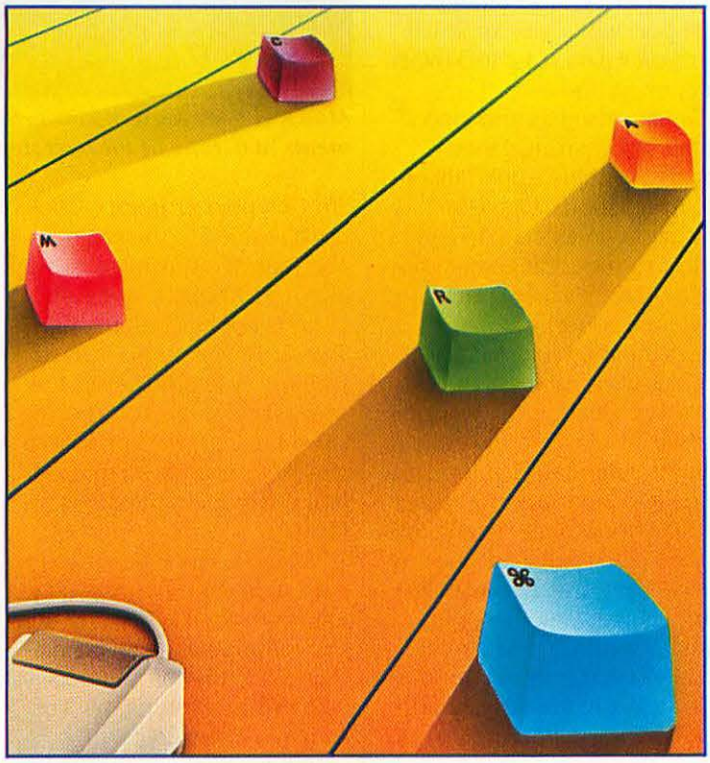


Is It Art or Is It Memorex?

Quite a lot can happen when a woman criss-crosses the country asking our best computer programmers whether or not they are creating art as well as lines of weird code. The book that came out of this quest, *Pro-*

(continues)

How To Make Your Maccing Faster, Easier, and a Lot More Fun!



Intelligent macros for the Macintosh.

Tempo macros speed your work or play on the Macintosh.

Record any series of Macintosh commands or keystrokes and Tempo will play them back, at top speed, every time you need them. With a single key code, you can execute a macro that replays an unlimited number of commands.

Add intelligence to your Macintosh software

If a macro needs to be performed 27 times in a row or every 15 minutes, Tempo will do that. If it depends on whether a number starts with a "$" or if a name is greater than "Jones," Tempo will read it and decide which way to branch. Tempo can even determine if it needs to *branch to another program.* Tempo will close the program you're in, open the other, and continue replaying your commands. Automatically. Exactly as you require.

Edit your macros for changes or corrections

You may edit Tempo macros the same way you create them – click to edit, click to change, click to save. Tempo has no complex programming language, simply step-by-step menu commands and dialog boxes.

What you can do with Tempo

- Reduce complex commands to a single keystroke.
- Automate moving information from one program to another.
- Have Tempo wait until the time you specify, then perform multiple tasks on your Macintosh – unattended.
- Guide new users through programs, prompting them with dialog boxes along the way.
- Distribute time-saving macros to other members of your company.
- Customize programs to work the way you need them to.
- Simplify, automate, customize, modify, design, and create in a million different ways!

Other Tempo features...

- Pause during a macro replay to enter text or make a selection.
- Record macros up to the limits of your disk space – hard drive or floppy.
- Assign up to 450 keyboard commands in each application.
- Use Command key codes or Option key codes.
- Replay in slow motion, in real time, or at high speed.
- Connect macros together, nested, branched or sequentially.
- Repeat the macro *if* or *until* it sees the specified text, or *for* a required number of times.
- Tempo works with nearly every Macintosh program.
- For the 512K or larger Macintosh and Macintosh XL.
- Works with all hard disk drives.
- Tempo is not copy-protected, so you can easily install it on your hard drive.
- If you're not absolutely happy with what Tempo can do for you and your Mac, return it within 90 days for a complete refund.

We guarantee your satisfaction.

For $99, you get more macro power than a micro has ever had before.

Call 1-800-367-6771 right now, today!

Call us for the dealer nearest you, or you can order directly from us.

Tempo™

Affinity Microsystems Ltd.
1050 Walnut Street, Suite 425
Boulder, Colorado 80302

Macintosh is a trademark licensed to Apple Computer, Inc. Tempo and Affinity are trademarks of Affinity Microsystems, Ltd.

Circle 274 on reader service card

Is It Art or Is It Memorex? (continued)

grammers at Work (Susan Lammers, Microsoft Press, 1986) provides insights into a wider range of subjects than might be expected from a mass inquisition of this rather homogeneous fraternity. There are insights on things like the nature of creativity, the future of computing, the not-always-beneficial results of working for a suddenly successful company, the importance of music to the human soul, and how thousands of years of Japanese philosophy led to the creation of *Pac-Man*.

To anyone personally acquainted with the wizards who write our programs and design our computers, this erudition is not surprising. Scratch the surface of a great hacker, and you usually find a Renaissance man. Programmers face the complex task of constructing complete systems out of the basic building blocks of ones and zeros. Since their tools allow unlimited creativity, programmers learn the value of working with fresh, nontraditional approaches. Interview after interview here reveals a personality willing to try what others haven't tried, new solutions that eclipse what was previously considered the best possible.

Though generally reticent, hackers really open up when given a chance. Susan Lammers has allowed her subjects to shape the interviews as they like, and their personalities and obsessions pour off every page. It's a good selection, too. You might already be convinced that Andy Herzfeld and Bill Gates are interesting fellows, but the book also includes fascinating sessions with names known only in computer circles, like Charles Simonyi, Jonathan Sachs, Butler Lamston, and Jaron Lanier.

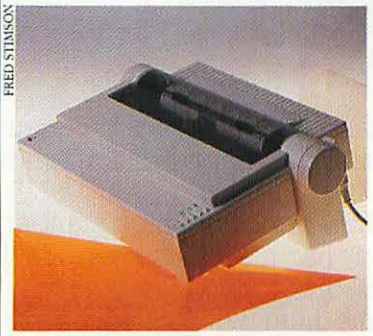
For budding programmers, this book is an invaluable tutorial on work habits (even including actual pieces of their programs, complete with comments and doodles), akin to the *Paris Review* series, "Writers at Work." For the rest of us, it's a good chance to meet the faces behind the interfaces.
–Steven Levy

ImageWriter II Award

The "gutsy-looking . . . extremely expressive" ImageWriter II dot matrix printer received an award for product design in the consumer product division of the annual design review sponsored by *ID*, the industrial design magazine. The design, by Apple Computer and Frogdesign (Apple's design consultant), was cited for the functionality of its control panel and its efficiency in storing fanfold paper.

"The columns that support the raised rear end suggest an architectonic look distinct from an earlier vacuum-molded trend in product design," says Bill MacKenzie, Apple's in-house design manager for the printer. "The shapes specifically identify the functions they house."

FRED STIMSON



Not just an ordinary printer–a gutsy-looking, expressive one.

If this point of view needs further clarification, just compare the design of the ImageWriter I to the ImageWriter II.
–Stuart Silverstone

GEORGE STEINMETZ



Graphic designer Aaron Marcus attributes the success of the Macintosh user interface (as evidenced by its numerous imitators) to its simplicity and consistent look and feel.

Aaron Marcus

The Macintosh user interface inherited the legacy of research at Xerox PARC and is now becoming the de facto standard for personal computers. Witness all the Mac-look-alike IBM PC and Apple II programs. Aaron Marcus, a graphic designer and authority on user interface design, maintains that the Mac and its predecessors represent an inevitable development in the evolution of user interfaces. Critical decision making about user interface design was taken out of the hands of computer programmers and given to graphic designers. Marcus believes that the Macintosh has given the user interface a widely recognized personality.

Basically, computers are graphic devices that should help us to communicate information as well as manage it, according to Marcus. "Typography, symbolism, color, layout, and sequencing constitute a visible language. As a visible language, the Mac user interface is an effective paradigm because it is simple, clear, and consistent; the characteristics of appearance and interaction are well defined."

Marcus's company, Aaron Marcus and Associates (Berkeley, California), has seven Macintoshes linked on a Corvus OmniNet with a 126-megabyte OmniDrive and the LaserWriter. He often receives requests to create Mac-like interfaces, and even uses the Mac to design interfaces for clients (as for Reuters's $100,000 Scitex graphic arts workstation and prototype screens, and users of Sun computers).

Although the Macintosh user interface has proven successful, Marcus believes the next generation of user interfaces must continue to redefine communication between humans and computers–especially as color, animation, and higher-resolution screens emerge.



The inventors of the 3.5" drive recommend only one floppy disk.

Theirs.

If your computer has 3.5" drives, it has a little bit of Sony. Because Sony invented the 3.5" drive technology that has taken floppy disk memory all the way to two megabytes.

So nobody knows better than Sony how important high standards are for producing 3.5" floppy disks. But then, Sony invented those, too, as well as the most demanding methods for making 3.5" disks.

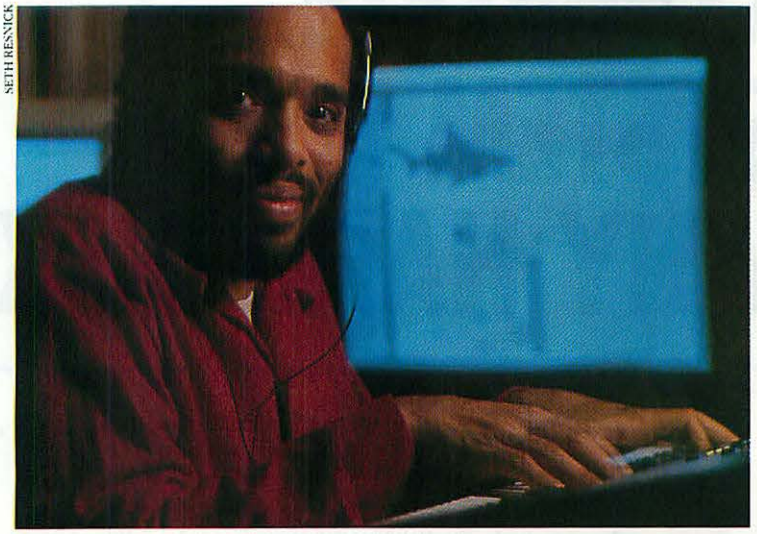
Such as the Sony Vivax™ magnetic medium, with the high coercive force necessary to suppress the "noise" that can cause disk error. And the Sony DDL™ binder system for incredibly even dispersion of magnetic particles on the disk surface. Then there's Sony's burnishing expertise that eliminates microscopic projections as small as 1/1,000,000th of a millimeter.

But the best reason to trust only Sony is your irreplaceable data. After all, you'll be storing six times the information on a disk that's one-third smaller than a 5.25" floppy. That's why we recommend only one floppy disk for our 3.5" drives. The Sony.

SONY®
THE ONE AND ONLY.®

©1986 Sony Corporation of America. Sony, Vivax, DDL and The One and Only are trademarks of Sony.

Circle 255 on reader service card


SETH RESNICK

David Levitt and his students at MIT's Media Laboratory have designed* HookUp!, *an iconic programming language that will be as "easy to use as driving an automobile."

HookUp!

Users have dreamed of programming with icons ever since the Mac was introduced. Imagine a Macintosh control panel that lets you reach in and reconnect all the input and output elements, including the screen—without typing or consulting a manual. At MIT's Media Laboratory, David Levitt and his students have built a prototype of an icon-based programming language that will let you do just that.

The program, *HookUp!,* has been used to compose music, to generate animation, and even to construct the "brains" of interactive animals in Alan Kay's experimental Vivarium project, in which children simulate living creatures with computers.

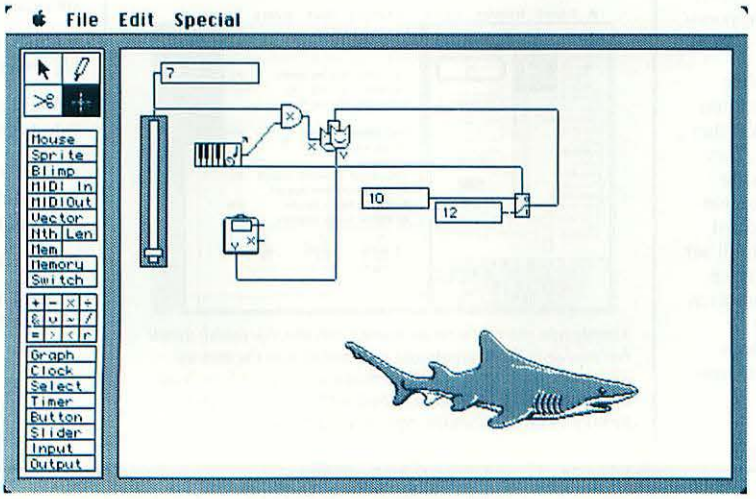
"*HookUp!* is a prototype of a software-writing environment that will be as easy to use as driving an automobile—[it will be] a software screwdriver or a universal joint for data," observes Levitt. He goes on to speculate that every Macintosh window will eventually have its own hidden control panel with which users can open the hood, see the circuitry, and customize the innards. They'll learn system programming without realizing it, he predicts.

Programs like *Helix, Filevision, Pinball Construction Set, ResEdit,* and *Servant* fall short of providing the full power of a programming language. None of them attempt to support real-time programming, not to mention music and animation—all key elements of *HookUp!,* which allows users to manipulate both static data and processes.

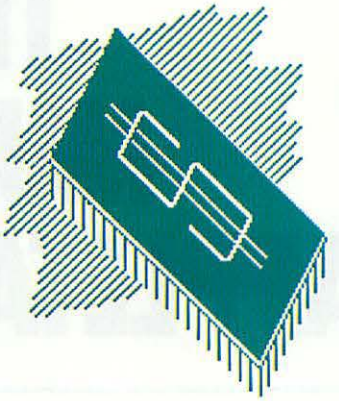
The cursor can be changed to a wiring tool for connecting *HookUp!*'s intuitive icons or a wire cutter for severing connections. Debugging is as easy as dragging around output boxes and connecting them.

Burt Sloane (of "Bug" and "MazeWars" fame) wrote the first version of the language, but MIT's Entertainment Group and Apple's Vivarium team are still working on it. Future versions must be accessible to Vivarium's second-graders, who may leave some "hoods" closed for a few years. MacroMind has joined the project, providing real-time animation and various sound capabilities; ultimately, you may be able to add customized features to programs like *VideoWorks* and *MusicWorks.*

Because *HookUp!* is optimized for real-time interaction with data, it is a simple matter to construct a voice-recognition system that responds to a variety of melodies vocalized by the user. Depending on what melody is intoned, *HookUp!* improvises a musical accompaniment in the style of Art Tatum, or turns on the kitchen lights and makes coffee, or responds in any other manner the user desires.—*Christopher Yavelow*



The circuit shown here lets the user control an animated shark with the mouse and a MIDI device. The result is a shark singing along with whatever is being played at the MIDI keyboard—real-time control of animation via MIDI data.



In the Chips

Last summer's United States-Japan Semiconductor Trade Agreement requires that Japanese chip makers sell chips for a fair market value established by the Commerce Department. This benefits United States semiconductor companies—but at the expense of hardware manufacturers who are now paying almost double for 1-megabit and 256K RAM chips. Prices for Macintosh memory upgrades have skyrocketed: 1-megabit chips jumped from $30 last spring to around $60 in the fall; 256K chips hovered around $5, up from around $2.25.

The Prodigy is a $7000 68020-based Macintosh with four megabytes of memory and 32 one-megabit RAM chips on its digital board. Its maker, Levco, had planned to reduce prices, but the FTC changes prevented it from doing so.

MacMemory, one of the most successful companies in the upgrade business, doesn't expect a severe impact for the present because of long-term contracts it signed before the trade agreement. But it's unlikely to offer lower prices in the near future. MacMemory has postponed introducing a 2-megabyte upgrade with 1-megabit chips until chip prices stabilize.

Dove Computer produces a 4-megabyte memory upgrade board priced at $2799—more than the Mac Plus itself. Originally, the company had hoped to sell the board for $1999.

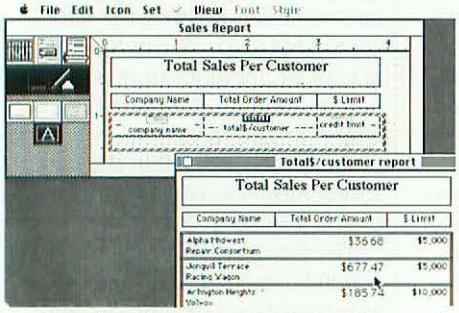
THE ONLY COMPLETE MULTIUSER SYSTEM FOR APPLETALK AND ANY HARD DISK

MultiUser Helix

MultiUser Helix is a shared data-based information management and decision support system that includes a complete application building environment. With MultiUser Helix you can design a system to run a business, office, or department and then share that system to coordinate the efforts of your people.

No programming necessary

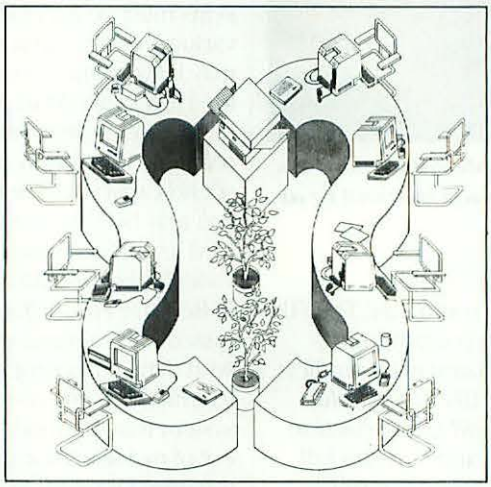
Use icons and visual design tools to create all the vital input and report forms, lists, analyses, and mail merge letters needed to run your business. No need to learn a programming language, understand arcane command codes or special formulae. Visual building blocks let you quickly set up data-based calculations to take care of any business need; from order entry, inventory control and invoicing to sales analyses, budget tracking and asset management.



Design forms that reflect the way your business works — from mailing labels to entry forms to presentation-quality reports. All Macintosh fonts, styles and graphics capabilities are supported.

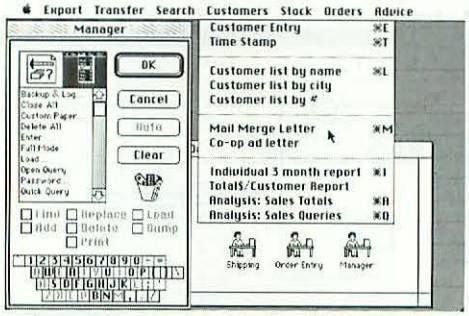
Everything built in

In MultiUser Helix, the multiuser capability — enabling more than one person to work with the same information base at the same time — is built into the software. All other systems require special hardware or extra software. They "force" a multiuser effect with programming tricks like "semaphores," and rely on external "fileservers" to simulate multiple access to files. This results in a complicated, inflexible, slower, and more expensive system. In MultiUser Helix, the whole network functions like a human nervous system, with its own updating and feedback mechanisms as a natural part of the system. There is no reliance on external hardware devices, and no need to worry about programming interlocks and special volume configurations.



A system everyone can share

Just connect your Macintosh computers with the AppleTalk network (the same cables that connect the Macintosh with the LaserWriter). MultiUser Helix automatically updates all screens and shows the current results of any changes made on the network. MultiUser Helix handles all network control, including record updating and record locking. Since everything is already built in, there is no need to worry about special fileserver hardware or software. Best of all, MultiUser Helix works with any hard disk.



Simply type your own menu names into the Macintosh menu bar and drag form names and commands into the menus. Then click user options and permissions on a per form basis before assigning keyboard controls which instantly open forms for entry, automatic reports and printing.

Expandable

This package contains 3 MultiUser Host/Guest disks, so that you can start with a 3 station network. Additional stations are available to a total of 31 per network.

Full support from Odesta

This MultiUser Helix package includes: 7 disks (2 Double Helix v.1+ program disks, System disk, Resource/Work disk with sample applications, 3 MultiUser Helix Host/Guest disks); 3 reference manuals, including a tutorial Quick Start guide, and an 18 ring project binder with notepad. To Odesta, your business is as important as our own: call us toll-free with technical questions or to inquire about our Consulting and Application Design Services.

Key Network Features

- Supports AppleTalk Network
- Compatible with any hard disk **(no fileserver required)**
- Expands up to 30 users per network
- Each user can have his or her own personalized menus and password that relates to that person's function
- Time stamping
- Automatic external data log file to ensure data integrity
- Automatic updating of any record or list — on screen
- Complete control of viewing, adding, deleting, changing, or printing information on a per form/per user basis
- Capability of having multiple "hosts" on one network simultaneously
- Can be used in conjunction with volume servers and file servers
- MultiUser Helix receives the same excellent support Odesta gives to the other members of the Helix family

Requirements

- Network host requires hard disk, and 1Mb memory is recommended.
- AppleTalk Network.
- Guest nodes work with the Macintosh Plus, 512E, or Macintosh 512 with external drive.

Odesta Corporation 4084 Commercial Avenue Northbrook, IL 60062 U.S.A.
800-323-5423 (In IL) 312-498-5615

© 1986 Odesta Corporation. Odesta Helix, Double Helix and MultiUser Helix are registered trademarks of Odesta Corporation. Macintosh is a trademark licensed to Apple Computer, Inc. by MacIntosh Laboratories.

Circle 13 on reader service card

MACWORLD EXPOSITION

VISIT US AT MACWORLD EXPOSITION MOSCONE CENTER, SAN FRANCISCO JANUARY 8–10, 1987 BOOTH #519

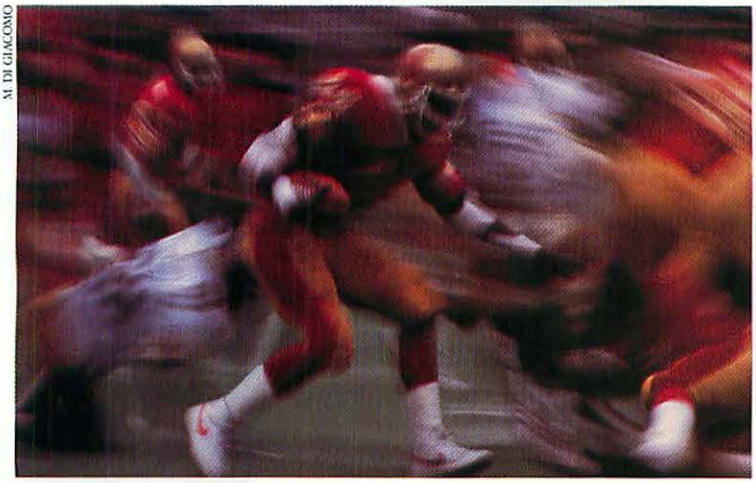
Armchair Quarterbacks

Avalon Hill Game Company has introduced *Mac Pro Football,* the result of ten years of research and four years of development to figure out over one billion theoretical play combinations. The program lets you coach the great Super Bowl teams of yesteryear by selecting offensive and defensive strategies for your team based on actual game situations.

The heart of the game is the statistical information provided for each team, incorporating more than 140 categories, including individual and team stats for rushing, passing, tackles, and punt returns.

You can play against the computer or with another player at one of three levels: championship, play-off, or contender. The referee calls penalties and tells you the results of each play. You can even dictate the playing conditions for games (for example, the 1984 Forty-Niners versus the 1967 Packers at Green Bay, temperature 17 below zero, wind 6 mph, 5:38 left in the fourth quarter, Packers trailing 17-14 with the ball on their own 38-yard line). The program keeps track of all statistics and provides a final game printout.

A League Play version allows you to fill out a game plan sheet with over one hundred statistical categories, instead of playing directly with the computer. You feed the data to the Mac and it plays the game in about 10 minutes. As the season progresses, the program keeps track of team and league statistics.



M. DI GIACOMO

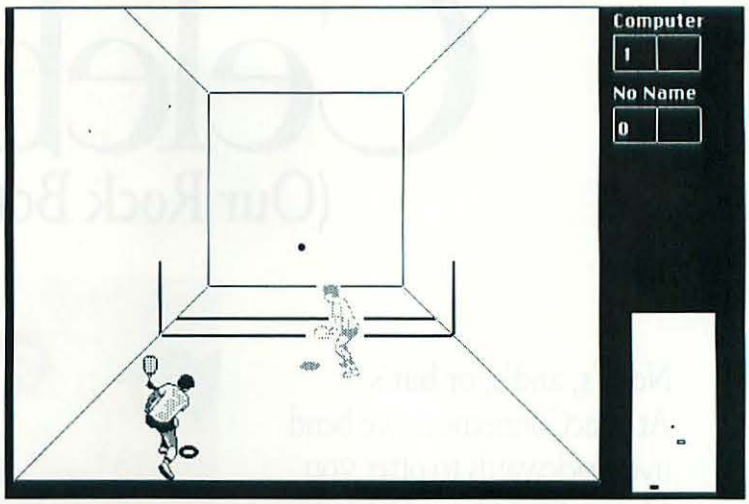
Mac Pro Football ***doesn't let you play linebacker for the Bears, but you get to coach the great Super Bowl teams of the past.***

Smash Hit Racquetball

Primera Software's *Smash Hit Racquetball* provides 273 frames of animation with movements and digitized sounds that are more realistic and flexible than those of many game simulations available for the Macintosh. For instance, the ball and players grow larger as they move toward the back of the court, and smaller as they approach the front wall. There are also keyboard controls for ball placement and finesse shots, slow-motion replays, and four levels of play.

Smash Hit Racquetball costs a good deal less than competing game software, and this is reflected in its austere manual and packaging. Primera expects to generate a fair amount of impulse buying with the extremely low per-unit price of only $14.95 (including an unconditional ten-day money-back guarantee).

Smash Hit Racquetball is not only a bargain but a very good simulation as well. Hopefully, other game developers will consider adopting such an impulse-buy concept. For more information, contact Primera Software at 800/643-0800 or 415/525-3000.



Flexible player movements, digitized sounds, and a good sense of perspective help give **Smash Hit Racquetball** ***a realistic feel. You'll even work up a sweat.***

The Birth of Mac Medical Software

According to David Robinson, president of Dapple-Tech Computers and publisher of *MedQuest,* only 4 percent of the estimated 700,000 doctors in the United States use computers to manage their practices. Robinson claims that 340,000 respondents to a 1984 survey of medical practitioners said they would probably automate their offices in the next two years. Competition from health maintenance organizations and independent provider associations is forcing doctors to consider microcomputer technology as a low-cost way to increase profitability, productivity, and ability to compete.

Some software developers have seized this opportunity and have introduced a variety of Macintosh-based medical office management programs during the past several months. Complete multiuser systems typically provide patient-record management, billing, office administration, and insurance handling capabilities. They range in price from about $4000 to $10,000, an attractive alternative to minicomputer-based solutions with an average system price, according to Robinson, of over $20,000.

The most recent issue of the *Omnis 3 Plus Business Directory* lists 24 products in the medical and medical office management categories. *MacGuide,* a list of Macintosh programs from the *International Software Database,* lists an additional four products.

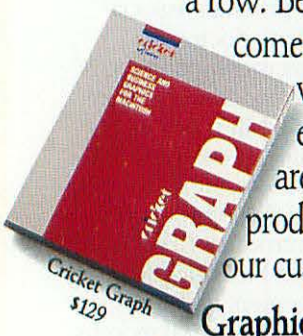
Most of the developers in-

(continues)

Celebrate!
(Our Rock Bottom Prices.)



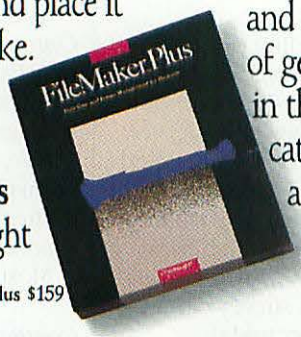
No if's, and's, or but's.
At MacConnection, we bend over backwards to offer you Macintosh add-ons and software at low prices. With service and support that's guaranteed to keep all your ducks in a row. Because, when it comes to the Macintosh, we know which end is up. Here are just a few of the products that keep our customers smiling.



Cricket Graph $129

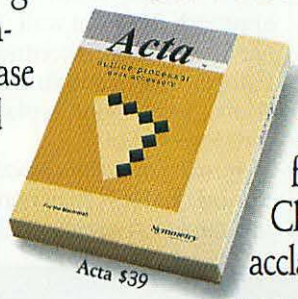
Graphic Standard.
Cricket Graph from Cricket Software gives you professional graphics in a wide range of bar patterns, plot symbols, fonts, sizes and styles. You can easily pull data from word processors, spreadsheets or databases, and then size and place it however you like.

Forms and functions.
FileMaker Plus from Forethought is a powerful database manager and a versatile forms generator. It comes with templates for invoices, purchase orders, mailing labels and other common business applications, so it's easy to get started.



FileMaker Plus $159

Collect your thoughts.
The **Acta** outline processor from Symmetry will capture and organize your latest flashes of genius—even when you're in the midst of another application. Outlines can be cut and pasted into other programs, and powerful search and sort features help track down lost thoughts.



Acta $39

Bottom Lines.
Rags to Riches Ledger is the foundation of Chang Lab's highly acclaimed line of accounting software (which also includes **Payables** and **Receivables**). The brand new version features macros for importing data, clairvoyant search fields, and a wide range of printing styles and fonts.



Rags to Riches Ledger $125

MacConnection™

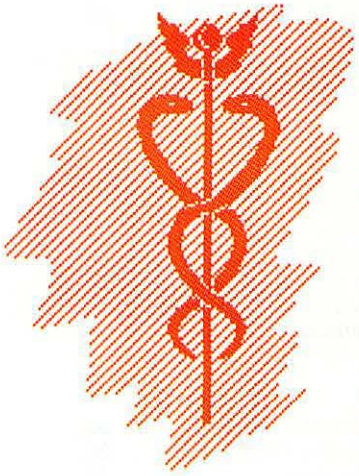
14 MILL STREET, MARLOW, NH 03456 1-800/Mac&Lisa or 603/446-7711

©Copyright 1986 Micro Connection, Inc. MacConnection is a division of Micro Connection, Inc. MacConnection is a trademark, and Micro Connection is a registered trademark of Micro Connection, Inc.

Birth of Mac Medical Software (continued)

volved believe that the medical-management marketplace is about to explode; small medical offices have resisted the previous generation of systems because of their high price. Many products were developed by doctor-programmers or with the help of medical advisers, and they all maintain that after-sale support is essential.

The Macintosh has an important edge over its competition.



"Since medical personnel rather than physicians are the primary users of the systems, minimizing training costs is a critical factor," says Ken Kingsbury of HealthCare Communications, developer of *MediMac, DentalMac, OptiMac,* and *ChiroMac.* Overall, the prognosis looks excellent for the Mac in medicine. For more information, contact DappleTech Computers *(MedQuest),* P.O. Box 220, Laurel, MD 20810, 301/792-2735; Blyth Software Inc. *(Omnis 3 Plus Business Directory),* 2929 Campus Dr. #425, San Mateo, CA 94403, 415/571-0222; *MacGuide,* 1520 S. College Ave., Fort Collins, CO 80521, 800/MAC-MENU; or Healthcare Communications *(MediMac),* 245 S. 84th #301, Lincoln, NE 68510, 800/422-6227.—*Steve Mann*

The Chinese Macintosh

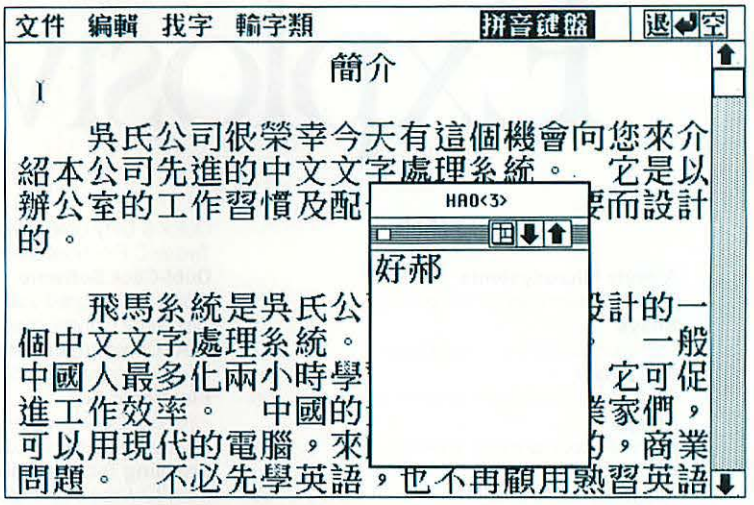
Unisource Software Corp. has introduced *FeiMa,* the first Chinese word processor for the Mac. It takes advantage of the Macintosh user interface and graphics to emulate a Chinese word processor and offer several other input methods.

According to *FeiMa* creator Gene Wu, computers have flourished in English-language societies because our alphabet comprises a closed set of characters. Until now, adaptations of English word processing techniques to Chinese have primarily relied on an English-language keyboard for input. But because the Chinese language is word oriented, with a potentially infinite set of characters, these attempts have been unsuccessful.

Instead of relying on a keyboard, *FeiMa* uses the mouse to simulate the Chinese pen. You can select characters from a simulated Chinese typewriter, access a dictionary of predrawn characters, specify the number of strokes in a character, and create characters and save them in the dictionary. Two keyboard methods are available: one, pioneered by IBM, maps radicals to the English-language keyboard; and the other, a phonetic method, lets you type in the sound or tone of characters in English and select from list characters. You can also combine English with Chinese in documents.

FeiMa comes with a 2450-character dictionary and prints on the ImageWriter, Toshiba 1350, and Epson FX-80. Because some of the program's internal structures deviate from the Macintosh user interface, you cannot print on the LaserWriter or import graphics and data from other applications.

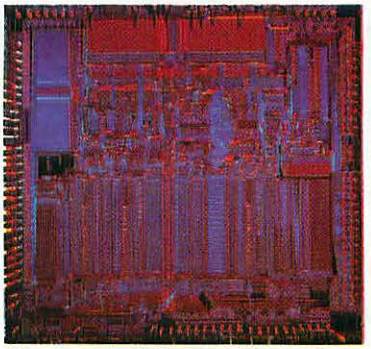
FeiMa is available in two versions: *FeiMa-II,* the complete system ($545), and *FeiMa-S,* an abbreviated version ($195). An additional 3080-character set is also available, as well as a translator that converts classic Chinese characters into the simplified form commonly used in the People's Republic of China. For more information contact Unisource, 23 East St., Cambridge, MA 02141, 800/343-5504.



FeiMa's phonetic keyboard method lets you transform English sounds into Chinese characters.

Motorola's 68030 and Beyond

Motorola, spurred by Intel's introduction of its 32-bit processor, the 80386, has released details about its 68030 processor. According to early reports, this next-generation processor will perform two to four times faster than Motorola's 68020, although it won't be available in quantity for another year.



The heart of the new Mac—the Motorola 68020 chip.

The 68020—currently used in workstations like Sun Microsystems' Sun/3 line and rumored to be the heart of Apple's new Macintosh line—is at least twice as fast as the Mac's current processor. The 68030 will likely provide a logical upgrade path for the Mac's system designers because it can conceivably run existing Mac programs up to eight times faster than the Mac Plus's current processor.

Like the 68020, the 68030 contains a memory manager on the chip that can manage 4 gigabytes of memory. Motorola also plans to offer a faster floating-point coprocessor, the 68882, that executes math operations two to four times faster than its predecessor, the 68881.

Motorola is also reportedly developing an even faster processor, the 78000, scheduled for release in 1987. Based on RISC (reduced instruction set computer) technology, it is capable of performing 20 million instructions per second, over 20 times more than the 8MHz 68000 used in the Mac Plus. —*David Ushijima* □

Explosive savings!

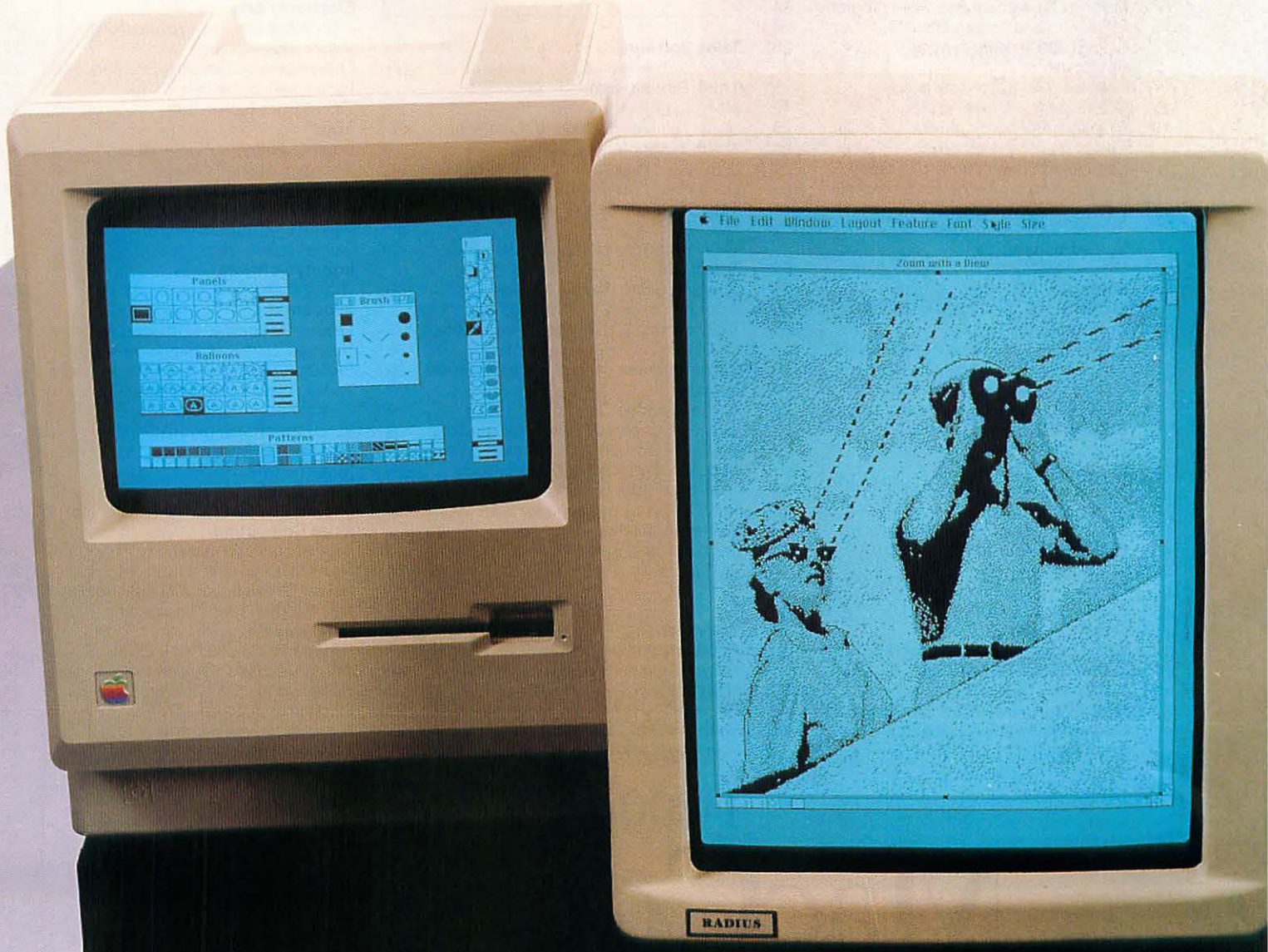
SOFTWARE

Affinity Microsystems
Tempo *(power user's macro utility)* . . . . . $69.
Altsys
Fontastic *(create your own fonts)* . . . . . 27.
Ann Arbor
FullPaint *(open four documents at once)* . . 55.
Arrays
Home Accountant *(req. external drive)* . . . . 52.
ATI
Teach Yourself Multiplan . . . . . 39.
Jazz or Excel Training . . . . . 39.
Batteries Included
The Mac BatteryPak *(9 desk accessories)* . 27.
Home Pak *(telecommunications, filer)* . . . . 29.
Time Link *(time management system)* . . . . 29.
Borland International
Sidekick w/Phonelink. . . . . 59.
Reflex *(information management analysis)*. 59.
BPI Systems
General Accounting *(full-featured)* . . . . . 229.
BrainPower
Think Fast *(improves recall)* . . . . . 23.
StatView *(statistics package)* . . . . . 59.
Designscope *(electronic circuit design)* . . 129.
StatView 512+ *(req. external drive, 512k)*. . . 179.
Broderbund
Print Shop *(create cards and memos)*. . . . . 49.
Geometry *(over 350 problems!)* . . . . . 69.
CAMDE
Nutricalc *(diet & nutrition analysis)* . . . . . 49.
Casady Company
Fluent Fonts *(two-disk set)* . . . . . 29.
Fluent Laser Fonts *(Bodoni, Calligraphy, Monterrey, Prelude, Ritz, & Sans Serif)*. *each* 49.
Central Point Software
Copy II Mac *(includes MacTools)*. . . . . 20.
Challenger Software
Mac3D *(3D graphics, CAD features)* . . . . . 129.
Chang Labs
Rags to Riches Ledger . . . . . 125.
Rags to Riches Receivables *(req. 512k)* . . . 125.
Rags to Riches Payables *(req. 512k)* . . . . . 125.
Rags to Riches Three Pak. . . . . 299.
Inventory Control . . . . . 245.
Professional Billing . . . . . 245.
Cortland
TopDesk *(7 new desk accessories)* . . . . . 39.
Creighton Development
MacSpell+ *(spell checker, req. 512k)*. . . . . 55.
Cricket Software
Statworks *(statistical package)*. . . . . 79.
Cricket Graph *(multiple windows)* . . . . . 129.
DataViz
MacLink *(transfer Mac/IBM data)*. . . . . 89.
Desktop Graphics
DrawArt *(MacDraw artwork, req. 512k)* . . . . 29.
DrawForms *(requires MacDraw)* . . . . . 30.
Digital, etc.
Maccountant *(integrated accounting)* . . . . . 99.
Turbo Maccountant *(w/video tape)* . . . . . 299.
Includes GL, AR, AP, Payroll, & Invoicing.
Dow Jones
Straight Talk *(access News/Retrieval)* . . . . . 62.
Spreadsheet Link. . . . . 65.
Market Manager PLUS . . . . . 129.
Dreams of the Phoenix
Day Keeper Calendar. . . . . 27.
Phoenix 3D *(3D graphics)*. . . . . 27.
Quick & Dirty Utilities Vol. 1 or Vol. 2. . . . . $27.
Twelve-C Financial Desk Accessory. . . . . 27.
Dubl-Click Software
World-Class Fonts! Vol. One or Vol. Two . . . . 29.
Calculator Construction Set. . . . . 39.
EDO Communications
Laserworks *(requires 512k, Laserwriter)* . . . 229.
Electronic Arts
Financial Cookbook *(financial formulas)*. . . . 32.
Deluxe Music Construction Set . . . . . 32.
Enabling Technologies
Easy3D *(create solid 3D objects)*. . . . . 79.
Enterset
Quickpaint *(find Paint files fast)* . . . . . 27.
Quickset *(icon-driven desk accessories)* . . . 27.
Quickword *(word processing tool)*. . . . . 32.
MacGAS *(spell checker, 512k, ext. drive)* . . . 55.
1st Byte
First Shapes *(preschool learning tool)* . . . . . 32.
Speller Bee, KidTalk, or Mathtalk . . . . . 42.
Smoothtalker *(speech synthesis)* . . . . . 52.
Forethought
Factfinder *(free-form info organizer)* . . . . . 79.
FileMaker *(custom forms & reports)* . . . . . 99.
FileMaker Plus *(feature-packed database)* . 159.
Fortnum/Southern
MacInooga Choo-Choo *(train set, 512k)*. . . . 21.
MacChemistry . . . . . 89.
FWB Software
Hard Disk Backup *(protect hard disk info)* . . 39.
Hard Disk Partition *(speeds up hard disk)* . . 39.
Hard Disk Util *(program backup)*. . . . . 59.
Great Wave Software
Christmas Favorites . . . . . 12.
Instrumental Favorites. . . . . 12.
The Art of Fugue *(Bach)* . . . . . 12.
KidsTime *(educational, ages 3-8)* . . . . . 29.
LOC *(strategy game)* . . . . . 29.
ConcertWare+ *(music composition)* . . . . . 29.
ConcertWare+ MIDI. . . . . 75.
Greene, Johnson
Spellswell *(60,000 word dictionary)* . . . . . 45.
Hayden Software
I Know It's Here Somewhere *(filer)*. . . . . 20.
Hayden:Speller *(for Word & MacWrite)*. . . . . 27.
MusicWorks *(songs for your Mac)* . . . . . 32.
DaVinci Building Blocks *(req. Paint program)* 46.
Home Design *(home planning tool)*. . . . . 49.
Score Improvement System for the SAT . . . . 59.
VideoWorks & MusicWorks Bundle . . . . . 59.
DaVinci Commercial Interiors. . . . . 114.
Ideaform
MacLabeler *(print disk labels)* . . . . . 29.
Imagine
Smart Alarms *(DA reminder system)* . . . . . 39.
Industrial Computations
Powermath *(equation solving tool)*. . . . . 52.
Infosphere
LaserServe *(network software)*. . . . . 125.
MacServe *(network software)* . . . . . 250.
Innovative Data Design
Paste-Ease *(requires Paint program)* . . . . . 35.
MacDraft *(new updated version, 512k)*. . . . 179.
Kensington
Graphic Accents *(req. Paint program)* . . . . . 29.
Type Fonts for Text *(16 new fonts)*. . . . . 29.
Type Fonts for Headlines *(req. 512k)* . . . . . 42.
Layered
Notes...For Excel or Jazz . . . . . 42.
Front Desk. . . . . 75.
Legisoft/Nolo Press
WillWriter 2.0 *(prepare your own will)* . . . . . $32.
Linguist's Software
Tech *(1000 different symbols)* . . . . . 59.
FOREIGN LANGUAGE FONTS
MacCyrillic. . . . . 39.
SuperFrench/German/Spanish . . . . . 39.
MacHieroglyphics, MacKana/Basic Kanji, MacSemitic/Coptic/Devanagari, MacKorean, MacArabic, MacGreek, MacHebrew *each* 59.
SuperGreek New Testament . . . . . 79.
LaserFrench/Greek/German/Spanish . . . . 79.
MacGreek/Hebrew/Phonetics . . . . . 89.
Living Videotext
ThinkTank 512k *(outline processor)* . . . . . 99.
More *(outlines, windows, & tree charts)* . . 159.
MacMemory
MaxRam & MaxPrint . . . . . 39.
MacroMind
M.U.D. *(Art Grabber+, CheapPaint)*. . . . . 32.
Magnum
Natural Sound Effects . . . . . 27.
Natural Sound Cable & Editor Disk . . . . . 89.
McPic - Volume 1 or Volume 2 . . . . . 29.
The Slide Show Magician 1.3. . . . . 35.
Manhattan Graphics
Desk Design *(2 volume set)* . . . . . 37.
Ready,Set,Go!3 . . . . . 175.
Microsoft
Flight Simulator *(the Mac takes flight)*. . . . . 33.
Learning Multiplan and Chart *(2 disks)*. . . . 39.
Chart 1.0 *(42 chart styles)* . . . . . 72.
Basic 2.1 *(Basic language interpreter)* . . . . 89.
Multiplan 1.1 *(63 columns by 255 rows)* . . 105.
File 1.04 *(flexible data manager)*. . . . . 111.
Word 1.05 *(word processor, mail merge)*. . 111.
Fortran 2.2 *(compiler)* . . . . . 169.
Works 1.0 *(integrated productivity tool)* . . 189.
Excel 1.0 *(power spreadsheet)*. . . . . 225.
Miles Computing
Mac the Ripper *(req. Paint program)* . . . . . 27.
Mindscape
The Luscher Profile *(personality profile)* . . . 24.
The Perfect Score: SAT. . . . . 47.
ComicWorks *(create your own comics)*. . . . 49.
GraphicWorks *(newsletters, ads, posters)* . 49.
Monogram
Forecast *(tax planning)* . . . . . 41.
Dollars & Sense *(home, small business)*. . . 81.
Nevins Microsystems
Turbocharger *(disk cache, req. 512k)*. . . . . 39.
New Canaan MicroCode
MDCFinder *(requires 512k)* . . . . . 20.
Mac Disk Catalog II *(requires 512k)* . . . . . 32.
Odesta
Helix *(req. 512k, external drive)* . . . . . 105.
Double Helix *(relational, custom menus)* . 289.
Palantir
MacType, MathFlash or WordPlay . . . . . 26.
Inventory Control, GL, or AR . . . . . *each* 69.
inTalk *(communication to emulation)* . . . . . 79.
PBI Software
Icon Switcher *(customized icons)*. . . . . 14.
Icon Fun & Games or Business Libraries . . 14.
HFS Locater *(DA organizer for HFS)*. . . . . 27.
Hard Disk Backup *(supports MFS, HFS)* . . 29.
Peachtree
Back to Basics GL, AP, or AR . . . . . *each* 89.
Polarware
Graphics Magician *(animation)* . . . . . 39.

Up on the Big Screen

Taking the measure of three large-screen Mac monitors

by Danny Goodman



PHOTOGRAPHS BY FRED STIMSON

Dynamite service!

ProVUE Development
OverVUE 2.0 *(power-packed database)* $149.
Mail Manager Template . . . . . 29.
Personal Finance Template . . . . . 29.
QED Information Sciences
Typing Made Easy *(instruction)* . . . . . 35.
Rubicon Publishing
Silver Palate Collection *(NY's finest!)*. . . . . 29.
Dinner At Eight *(recipes to wines)* . . . . . 35.
Dinner At Eight-Silver Palate Bundle . . . . . 59.
Satori
BulkMailer *(mailing lists)* . . . . . 75.
Sierra On-Line
MacOneWrite CD, AR, or GL. . . . . *each* 79.
Silicon Beach Software
Accessory Pak 1 *(useful utilities)*. . . . . 21.
Silicon Press *(printer utility, 512k)* . . . . . 42.
Simon & Schuster
Mac Art Department *(req. Paint program)* 24.
Paper Airplane Construction Kit. . . . . 24.
Typing Tutor III *(learn to type!)*. . . . . 35.
SoftStyle
Colormate Art *(Colormate images)*. . . . . 29.
Colormate *(color printing utility)* . . . . . 49.
Bluestart *(IBM printer driver)*. . . . . 29.
Epstart *(Epson printer driver)* . . . . . 29.
Laserstart *(Hewlett-Packard Laserjet)* . . . . . 59.
Decision Map *(make better decisions!)* . . . 85.
Software Discoveries
Record Holder *(data manager)* . . . . . special
Software Ventures
Microphone *(communications)* . . . . . 65.
Solutions, Inc.
Glue *(creates "print to disk" capability)* . . . 35.
Springboard
Art a la Mac Vol. 1-People and Places . . . . 23.
Art a la Mac Vol. 2-Variety Pack . . . . . 23.
Easy as ABC *(ages 3-6, letters)* . . . . . 29.
Early Games *(ages 2-6, shapes, counting)* 29.
State of the Art
Electric Checkbook *(print checks)* . . . . . 29.
Survivor Software
MacMoney *(financial planner)* . . . . . 49.
Symmetry
Acta *(outline/writing desk accessory)* . . . . . 39.
PictureBase *(clip art manager, 512k)* . . . . . 45.
T/Maker
ClickArt Personal Graphics, Effects . . .*each* 29.
ClickArt Letters, Publications . . . . . .*each* 29.
ClickArt Holidays . . . . . 29.
Write Now *(new word processor)* . . . . . 119.
Target Software
Merriam Webster's Thesaurus . . . . . 29.
MacLightning *(interactive spell checker)* . . 53.
Medical Dictionary. . . . . 53.
Legal Dictionary . . . . . 53.

MacConnection Special of the Month
through January 31, 1987

SOFTWARE DISCOVERIES
Record Holder
Flexible and easy-to-use data manager. Great for mailing lists and labels, expense accounts and personnel records. Non copy-protected.

- Strong search capabilities
- Preview reports before printing
- Clear, concise manual & help-screens
- Automatic Save feature

For your Mac or Mac Plus . . . . . $42.

Telos Software
Business Filevision *(512k, external drive)* 199.
Think Educational
MacEdge II *(math & reading)*. . . . . 28.
Mind Over Mac *(5 challenging games)* . . . 28.
Think Technologies
Lightspeed Pascal. . . . . 89.
Lightspeed C *(C Compiler)*. . . . . 129.
TML Systems
TML Source Code Library . . . . . 59.
TML Pascal *(compiler, req. 512k)* . . . . . 69.
TrueBasic
True BASIC *(fast, flexible & portable)* . . . . . 89.
Algebra, Pre-calculus, Calculus, Statistics, Trigonornetry, 3D Graphics, Discrete Math, Probability & Chippendale utilities . . .*each* 36.
Runtime *(create stand-alone applications)* 59.
Unicorn
Animal Kingdom *(ages 6-12)* . . . . . 29.
Decimal Dungeon *(math, ages 9 and up)*. . 29.
Fraction Action *(arcade style math game)* . 29.
Mac Robots *(pre-school program)* . . . . . 29.
Math Wizard *(math games, ages 5-10)*. . . . 29.
Read-A-Rama *(reading, ages 5-8)* . . . . . 35.
William & Macias
myDiskLabeler *(design & print labels)* . . . . 25.
myDiskLabeler w/color *(req. Imagewriter II)* 34.

GAMES

Activision
Hacker *(you're on your own!)*. . . . . 27.
Hacker II *(breach Russian computer)*. . . . . 30.
Mind Shadow *(Who am I?)*. . . . . 27.
Borrowed Time *(murder mystery)*. . . . . 27.
Shanghai *(Mah Jongg strategy)*. . . . . 27.
Alter Ego *(male or female version)* . . . . . 36.

Ann Arbor Softworks
Grid Wars *(3D graphic arcade)* . . . . . $22.
Artworx
Bridge 4.0 *(sharpen your skills)* . . . . . 21.
Avalon Hill
MacPro Football *(req. 512k)*. . . . . 32.
Blue Chip
Millionaire *(stock market)*. . . . . 35.
Tycoon *(commodities)* . . . . . 35.
Baron *(real estate)* . . . . . 35.
Squire *(personal finance, req. 512k)*. . . . . 35.
Broderbund Software
Lode Runner *(over 150 levels)* . . . . . 24.
Ancient Art of War *(military strategy)*. . . . . 27.
Toy Shop *(create working models)* . . . . . 39.
Bullseye
Ferrari Grand Prix . . . . . 35.
Fokker TriPlane Flight Simulator . . . . . 35.
Electronic Arts
Archon *(arcade strategy, req. 512k)* . . . . . 27.
Skyfox *(3D graphics)* . . . . . 27.
One on One/Dr J vs Larry Bird *(req. 512k)*. . 27.
Patton-vs-Rommel *(req. 512k)* . . . . . 27.
Pinball Construction Set. . . . . 27.
Epyx
Rogue *(strategy dungeon classic!)*. . . . . 24.
Temple of Apshai *(4 levels)* . . . . . 24.
Winter Games *(Olympic events)* . . . . . 24.
Hayden Software
Perplexx *(scrabble-type game)* . . . . . 24.
Sargon III *(9 levels of chess)*. . . . . 29.
Infinity Software
Grand Slam *(tennis, req. 512k)*. . . . . 28.
Infocom
Leather Goddesses of Phobos, Moonmist, Ballyhoo, Cutthroat, Hitchhiker's Guide, Planetfall, Wishbringer, Enchanter, Trinity, Zork 1, The Witness *(standard)* . . . . . *each* 24.
Zork II, Zork III, Sorcerer, Suspect, Mind Forever Voyaging *(advanced)* *each* 26.
Spellbreaker *(expert)* . . . . . 29.
Invisiclues *(hint booklets)* . . . . . .*each* 6.
MacroMind
Maze Wars+ *(play via modem or network)* . 32.
Miles Computing
Fusillade *(arcade maze)*. . . . . 21.
MacAttack *(3D tank simulation)* . . . . . 27.
Harrier Strike Mission *(3D flight simulation)* 27.
MacWars *(3D space simulation)*. . . . . 27.
Mindscape
Rambo: First Blood Part II . . . . . 24.
James Bond 007: "A View to a Kill" . . . . . 24.
James Bond 007: "Goldfinger". . . . . 24.
Stephen King's "The Mist" . . . . . 24.
Racter *(converse with your Mac!)* . . . . . 27.
Balance of Power *(world politics)* . . . . . 30.

1-800/Mac&Lisa 660C

MacConnection™

MEMBER DIRECT MARKETING ASSOCIATION

MacConnection, 14 Mill Street, Marlow, NH 03456 800/622-5472 603/446-7711

©Copyright 1986 Micro Connection, Inc. MacConnection is a division of Micro Connection, Inc. MacConnection and Micro Connection are trademarks of Micro Connection, Inc.

All items subject to availability. Prices subject to change without notice.

*Defective software replaced immediately. Defective hardware replaced or repaired at our discretion. Some items have warranties up to five years.

Ultimate support.

Brataccus *(great graphics, req. 512k)* ... $30.
Uninvited *(mystery adventure)* ..... 30.
Deja Vu *(murder mystery)*..... 33.
Origin Systems
Exodus: Ultima III *(fantasy adventure)* .... 38.
PBI Software
Strategic Conquest *(multi-user)* ..... 35.
Polarware
Transylvania, Sword of Kadash, Xyphus, Crimson Crown..... *each* 15.
Psion
Psion Chess *(3D and multi-lingual)*..... 31.
QWare
Orb Quest *(graphic fantasy adventure)* ... 29.
Scarborough
Make Millions *(business simulation)*..... 29.
Sierra On-Line
Championship Boxing *(knock 'em out!)*... 25.
Ultima II *(role playing adventure)* ..... 25.
Silicon Beach Software
Airborne! *(digitized-sound war game)* .... 20.
Enchanted Scepters *(sound & graphics)* .. 21.
Dark Castle *(digitized arcade game)* ..... 28.
World Builder *(create adventure games)* .. 42.
Simon & Schuster
Star Trek—The Kobayashi Adventure..... 24.
Sir-Tech
Mac Wizardry *(high-rated adventure)*..... 36.
Spectrum Holobyte
GATO *(submarine simulation)*..... 26.
Orbiter *(requires 512k)*..... 27.
Tellstar II *(No. & So. hemispheres, req. 512k)* 45.
Videx
MacGammon/Cribbage ..... 28.
MacVegas *(7 casino games)* ..... 34.

HARDWARE

Apricorn
ApriCord Mac *(Mac Plus parallel interface)* 75.
AST Research
AST 2000 *(20 MB, 20 MB tape)* ..... 1995.
AST 4000 *(74 MB, 60 MB tape)* ..... 4895.
Cambridge Automation
MIDI Conductor..... 69.
Curtis Manufacturing
Diamond *(6 outlets)*..... 29.
Emerald *(6 outlets; 6 ft cord)* ..... 36.
Sapphire *(3 outlets; EMI/RFI filtered)* ..... 47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 55.
Dove Computer
Memory Expansion Units
Mac Snap 524 *(512k to 1 Meg)*..... 159.
Mac Snap Plus 2 *(Mac Plus to 2 Meg)* ... 309.
Mac Snap 548 *(512k to 2 Meg)* ..... 469.
Ergotron
MacTilt *(includes external drive bracket)*... 75.
MacBuffer 512k..... 369.
MacBuffer 1 Megabyte ..... 569.
Hayes
Smartcom II *(communications software)* .. 89.
Smartmodem 300, 1200 or 2400..... call
IOMEGA
Bernoulli Box *(dual 10-MB w/SCSI)*..... 1869.
Bernoulli Box *(dual 20-MB w/SCSI)* .... 2369.
Kensington
Mouseway *(mouse tracking pad)*..... 8.
Mouse Pocket *(for your idle mouse)* ..... 8.
Mac (Plus), HD, System Saver Cover *each* 9.
Imagewriter (II) Dust Cover ..... 9.
AppleTalk Clips ..... 11.
Mouse Cleaning Kit w/Mouse Pocket..... 17.
Disk Case *(holds 36 Mac disks)* ..... $19.
Disk Drive Cleaning Kit ..... 20.
Tilt/Swivel ..... 22.
Copy Stand..... 24.
Polarizing Filter ..... 34.
Surge Suppressor..... 35.
A-B Box *(specify Mac or Mac Plus)*..... 65.
Control Center..... 65.
System Saver Mac *(complete with fan)*.... 65.
Koala Technologies
KAT Graphics Tablet..... 139.
MacVision *(digitizer)*..... 175.
Kraft
QuickStick *(Mac joystick)*..... 42.
Mirror Technologies
FastPort *("SCSI" for your 512k Mac)* .... 139.
MagNet 20x *(w/MacServe)* ..... 899.
Magnum 20 Tape Backup ..... 929.
MagNet 30x *(w/MacServe)* ..... 995.
MagNet 40/40*(40MB, 40MB tape)*..... 2559.
Personal Computer Peripherals
MacBottom Hard Disk 20MB *(SCSI)* .... 879.
PKI
McD 800k External Drive..... 199.
Summagraphics
MacTablet 6" x 9" *(stylus driven)*..... 265.
MacTablet 12" x 12" *(sketching)*..... 369.
Systems Control
MacGard *(surge protection)*..... 55.
Thunderware
Thunderscan *(high-resolution digitizer)* .. 175.
Mac Plus Power Accessory ..... 29.
Western Automation
DASCH RAMdisk 1000k ..... 349.
DASCH RAMdisk 2000k ..... 399.

DISKS

Single-sided Diskettes

BASF 3½" Disks *(box of 5)* ..... 9.
Sony 3½" Disks *(box of 10)*..... 17.
Verbatim 3½" Disks *(box of 10)*..... 17.
MAXELL 3½" Disks *(box of 10)*..... 17.
Fuji 3½" Disks *(box of 10)* ..... 17.
3M 3½" Disks *(box of 10)*..... 19.

Double-sided Diskettes

BASF 3½" Disks *(box of 5)* ..... 14.
Sony 3½" Double-sided Disks *(10)*..... 26.
Verbatim 3½" Double-sided Disks *(10)*... 26.
MAXELL 3½" Double-sided Disks *(10)*... 26.
Fuji 3½" Double-sided Disks *(10)* ..... 26.
3M 3½" Double-sided Disks *(10)*..... 27.

INFORMATION SERVICES

Compuserve
Compuserve Information Service..... 27.
Dow Jones
Dow Jones News/Retrieval Membership Kit 24.
Source Telecomputing
The Source *(subscription & manual)* ..... 30.

ACCESSORIES

Automation Facilities
Floppiclene Drive Care Kit ..... 15.
Floppiclene Refill ..... 10.
MacPak Complete Care System ..... 29.
Clean Image Ribbon Co.
Clean Image Ribbon Kit..... 12.
Computer Coverup
External Disk Drive Cover ..... $4.
Imagewriter (II) Cover ..... 8.
Mac (Plus) & Keyboard *(two covers)*..... 10.
Diversions
Underware Ribbon *(iron-on black transfer)*.. 9.
Multi-color Transfer Ribbon ..... 19.
ColorPack *(includes Colorpens)*..... 19.
Environmental Software Company
MACATTIRE (Rip-stop nylon covers)
External Drive Cover *(400k or 800k)*..... 7.
Imagewriter (II) Cover..... 11.
Wide Imagewriter Cover..... 13.
Mac (Plus) & Keyboard Cover ..... 15.
Laserwriter Cover..... 17.
Mac (Plus) & HD20 & Keyboard Cover.... 18.
I/O Design
Imageware II *(Imagewriter II carry case)*... 59.
Macinware Plus *(Mac Plus carry case)*.... 69.
Innovative Concepts
Flip & File Micro *(holds 25 disks)* ..... 9.
Flip & File *(holds 40 disks)* ..... 18.
Innovative Technologies
The Pocket Pak *(holds 6 disks)*..... 9.
The Easel *(holds 20 disks)* ..... 12.
The Disk Directory *(holds 32 disks)* ..... 18.
The Library *(carousel, holds 80 disks)* .... 29.
Kalmar Designs
Teakwood Roll-top Case *(holds 45 disks)*.. 15.
Teakwood Roll-top Case *(holds 90 disks)*.. 22.
Magnum
Mouse Mover *(let your mouse ride!)*..... 14.
Moustrak
Moustrak Pad *(standard 7" x 9")* ..... 8.
Moustrak Pad *(large 9" x 11")*..... 9.
Ribbons Unlimited
Imagewriter Color Ribbons ..... 5.
Imagewriter Ribbons Six Pack..... 25.
Smith & Bellows
Mahogany Disk Case *(holds 90 disks)*.... 28.
Mac Plus Pack *(covers & disk case)*..... 39.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for charge orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders usually shipped 1st Class Mail.
- Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products.*
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

SHIPPING

Accounts on net terms pay actual shipping.
Continental US: For printers and drives add 2% for UPS ground shipping (call for UPS Blue or UPS Next-Day-Air). For all other items, add $2 per order to cover UPS shipping. We will automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground. **Hawaii:** For printers and drives, actual UPS Blue charge will be added. For all other items, add $2 per order. **Alaska and Outside Continental US:** Call 603/446-7711 for information.

In Case of Emergency

Big Mac attack. Real big.
Robert Smith (his real name) is a rationalist. He designs rational tools and systems for surviving a nuclear attack.

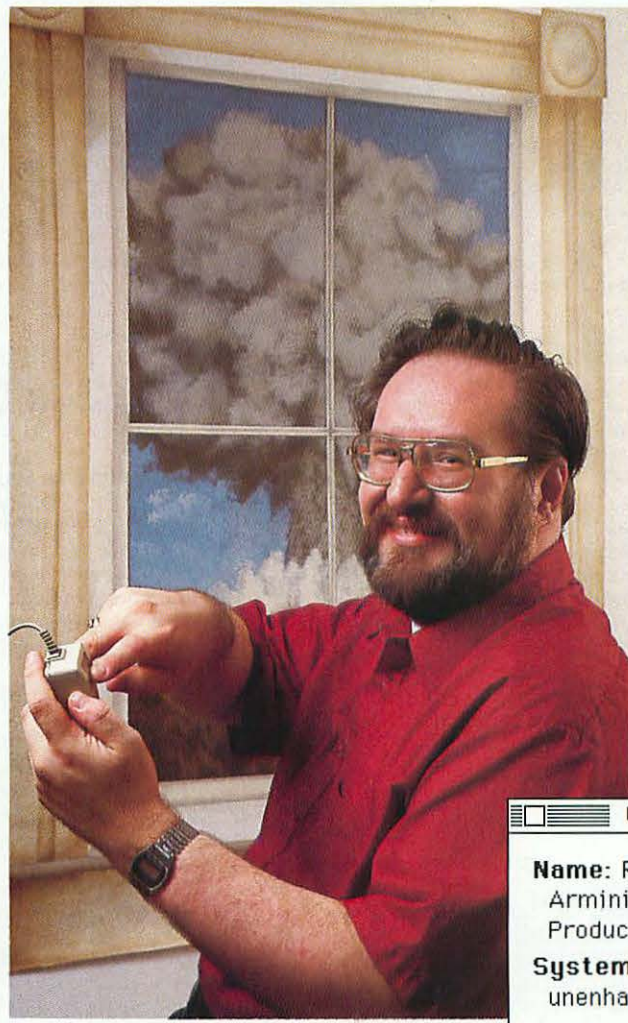
Throw away your notions of crazy geeks armed to the teeth in desert outposts. Our winner has thought this thing out. He's even written a book on the subject: "How to Survive a Nuclear Disaster."

Gimme Shelter.
Mr. Smith opposes using the big one as much as the next sane human being. But, he dares to think the unthinkable: that your chances for survival are better if you have a very well equipped shelter from the storm. So he developed the concept of group-owned CAYASA's, or "Come-As-You-Are Survival Areas." He'll buy the land, pre-dig emergency shelters, purchase tools and supplies, publish a newsletter, get an 800 number, and give training sessions to members, all for a rather low monthly fee.

Where has all the software gone?
The Mac is a real lifesaver when it comes to setting up this operation. Smith is using MacProject for strategic planning, and Microsoft Word, MacWrite, and MacLightning for his extensive word processing. MacPaint, MacDraw, and FullPaint help with the design and layout of fallout shelters and tools. And OverVue and Helix help him create killer databases of the numerous military facilities that comprise our nuclear infrastructure (i.e. not good locations for CAYASA's).

To tell you the truth, we're a little overwhelmed at how many Mac programs Mr. Smith uses. But, after all, there may not be much time.

There is, however, we hope, enough time for you to enter our contest. Are you doing something fascinating with your Mac? Let us know.

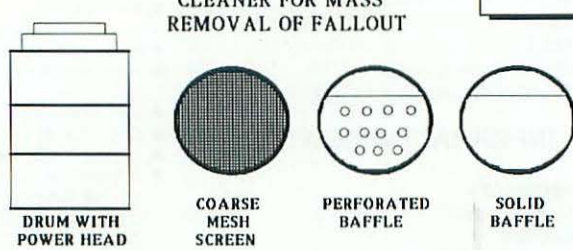


Contest Winner #2

Name: Robert C. Smith, C.E.O. Arminius Publications & Productions, Merchantville, NJ

System: Mac Plus, Mac 128, and unenhanced Mac 512.

Application: Develops strategies for surviving nuclear war.



Mr. Smith's innocent looking vacuum could be a real lifesaver when the long hard rain starts to fall.

"My Connection."

MacConnection™

14 MILL STREET, MARLOW, NH 03456 1-800/Mac&Lisa or 603/446-7711

©Copyright 1986 Micro Connection, Inc. MacConnection is a division of Micro Connection, Inc. MacConnection is a trademark, and Micro Connection is a registered trademark of Micro Connection, Inc.

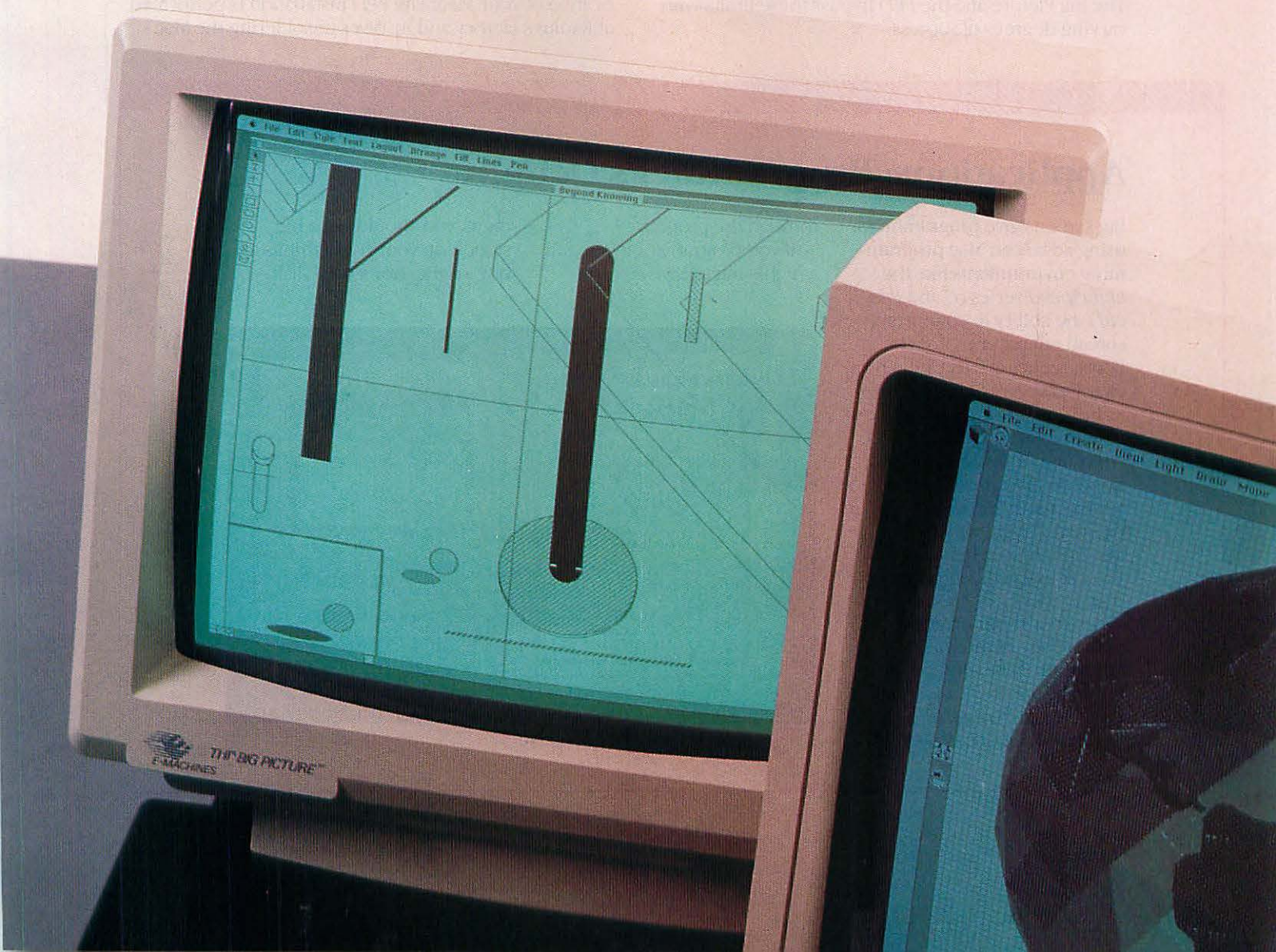
As kids, most of us played with the discarded tube from a paper-towel roll, imagining it to be a telescope. When we peered through the tube, we could see only a fraction of our normal field of view. To see things in their entirety, we had to wave the tube round and round. Little did we know that one day we would "scroll" our computers around in a similar way. In many applications, the view on a monitor is only a small portion of an entire document. The Macintosh in particular has been criticized for its limiting 9-inch peephole.

While it appears that Apple will soon offer optional solutions for increased screen size in one or more expandable Macintoshes, third-party developers are forging ahead in the quest for monitors that show current Mac users more of their work.

I spent many hours examining three big screens to find out how well they function with popular Mac programs and, more important, whether their hefty price tags—$2000 to $3000—can be justified by improved productivity. The models I reviewed are the MegaScreen, by MicroGraphic Images; the Big Picture, by E-Machines; and Radius's Full Page Display (FPD).

The MegaScreen and the Big Picture display a horizontally oriented, or *landscape,* view and disable the Macintosh internal screen. On the other hand, the FPD shows a vertically oriented, or *portrait,* display, and the FPD system keeps the Mac internal screen alive for viewing desk accessories, separate program modules, or an additional segment of the document shown on the large screen.

One caveat: intense competition among big-screen makers will keep them leapfrogging each other with improvements for a while. What you'll read here about software compatibility and other issues is a



snapshot of the situation in October 1986. Some problems will have been solved by the time you read this, while others will just be surfacing. Use this review to avoid pitfalls and to be a more critical consumer.

Software Compatibility

The three screens under consideration do more than magnify the normal contents of a Mac screen for group viewing (as does, for example, the MacVideo Processor, from MultiVideo). They actually display more of your documents: more lines of text, more spreadsheet cells, larger portions of pictures.

To achieve this, the monitors require extra circuitry inside the Macintosh and additional system software. The software intercepts video output going to the computer's internal screen and tells your application program that it can stretch its window-display wings. However, not all programs accept the invitation. Applications seem to fall into three categories.

Game programs and several programs, like *MacPaint,* that don't create standard, expandable windows (those with scroll bars) are unable to take advantage of the large screens. The second category includes programs like *MacWrite* and *FullPaint,* which have expandable screens but also limit the size of the display. The Big Picture and the FPD bypass these limits with varying degrees of success.

Programs in the third group let you adjust window size at will. According to the big-screen makers, applications that stick to Apple's programming guidelines should work properly with the expanded monitors. Fortunately, most popular productivity software falls into this category. The most cooperative of these programs check the system—as adjusted by the screen software—for the maximum screen size and automatically open new windows that fill the entire space. Some programs, however, open default (new) windows in a size that fills only a traditional Mac screen; you must then manually expand the window to fill the screen.

Even applications that work with big screens can encounter difficulty displaying, updating, and scrolling information in oversized windows. This tendency showed up in an uncomfortably high percentage of Microsoft products, including *Word* version 1.05, *Excel* version 1.00, and a prerelease version of *Works* I tested. Microsoft is aware of the difficulties and is working toward compatibility with as many big screens as possible.

Installation

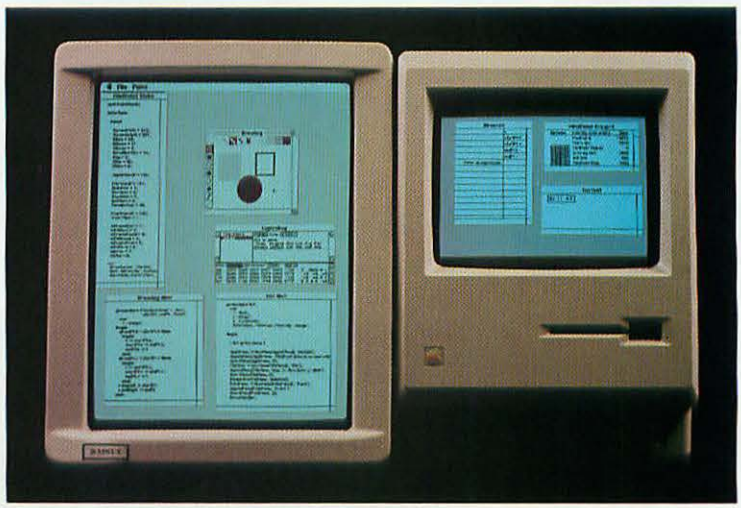
All three screens require dealer or factory modification of your Mac. The FPD installation is performed at Radius's factory and involves unsoldering the Mac's

Applications: Programmer's Delight

Big screens give programmers using advanced Mac programming environments like the *LightSpeed* series (*C* and *Pascal*) the ability to comfortably spread out six or more windows, reducing frustration by a factor of several points.

In *LightSpeed Pascal,* for example, you can have a project window and several edit windows open for instant access to various modules (units) of your program. Then, when it's debugging time (when isn't it?), you can open the Observe and Instant windows, plus any windows your program generates, without any of the windows overlapping. In addition, the Observe window can be made long enough to display dozens of variables at once as you step through the program.

If you program for a living in a highly interactive environment, you should put a big screen on your list of things to buy—right after a hard disk.



LightSpeed Pascal *on the Radius FPD*

Applications: The Business Big Four

Among the standard productivity applications—spreadsheets, database management, word processing, and telecommunications—all but the last benefit from big screens.

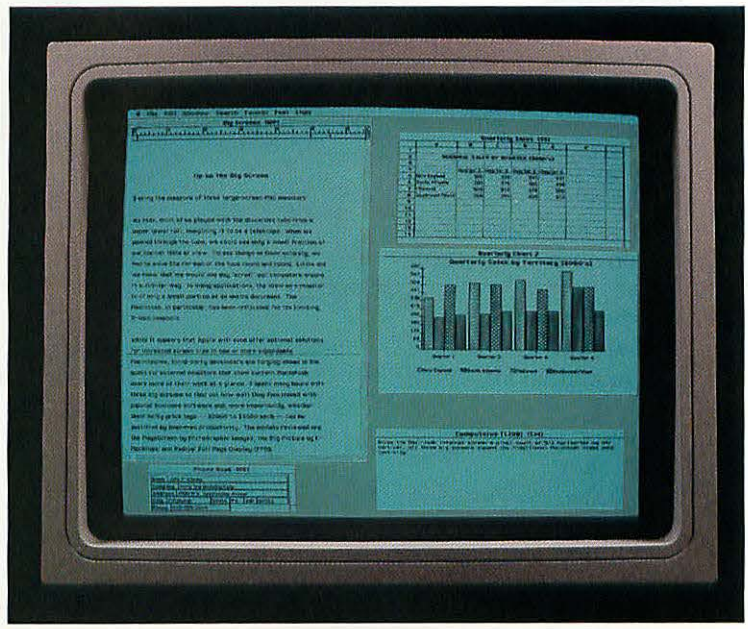
A landscape screen is fantastic for spreadsheet fanatics. With the right font and column width, you can display a year's worth of columns, plus labels and totals. A beta-test version of *Excel* 1.03 I have displays a default worksheet of 15 columns by 62 rows on the MegaScreen. *Jazz*'s spreadsheet has no problem displaying 14 columns by 50 rows on the Big Picture.

Database programs on big screens let you design more readable entry forms and on-screen reports. Since databases are often forms-oriented, a portrait display like the FPD's is ideal. And having the extra space available while you're building relational databases with programs like *Reflex* and *Helix* makes the job much easier.

Big screens are great for writers and editors. The ability to see a complete page of a document or to look at notes in separate windows while you're writing can be a big plus. *MacWrite* can be tricky with some displays, however (see article), and *Microsoft Word* version 1.05 doesn't update the bottom of a page-long screen correctly. Be sure the software and hardware you're considering meet your requirements.

If you're a fan of integrated software, such as *Microsoft Works* and *Jazz,* you'll think you've died and gone to Heaven on a big screen, especially if you're using one of the landscape monitors. You'll finally have enough space to stretch out and simultaneously keep many large windows open and in the clear. For example, you can display a full-page word processing document while keeping your phone number database window tucked away in a corner. You could conceivably create a multiple-window environment to use as your regular desktop. In other words, the big screen can heighten the sense of integration intended by the program's designers.

While all these application types are enhanced by a big screen, whether the improvement is enough to warrant the dollar outlay is another question. In general, the more hours you typically spend in front of your Mac each day, the more valuable you'll find a big screen.



Microsoft Works *on the MegaScreen*

68000 microprocessor, installing a socket in its place, and adding a circuit board containing both your 68000 and Radius's proprietary circuitry. The Big Picture requires only a clip-on board and a cooling fan, both of which can be installed by a dealer. The MegaScreen uses two boards and a fan installed by means of a 68000 clip and three soldered connections. A dealer can also perform this conversion.

With these extra boards, your big screen is unlikely to leave you room for an internal hard disk or other add-ins, although E-Machines is working on HyperDrive compatibility. The Big Picture also claims to be compatible with some Levco memory upgrades.

Cabling between the Mac and the three big screens is similar. The FPD and the Big Picture have connectors that fit inside the small cutout on the Macintosh rear panel where the security kit is normally installed. The MegaScreen's connecting cable is wired directly to the Mac and comes out through the same

hole. Obviously, this means that the security kit is out of the question for a large-screen setup.

System Software

Because the Macintosh was not designed to work with an external, oversized monitor, each big screen has its own software that reconfigures your Mac. The MegaScreen comes with a disk that includes a configuration program and a start-up program called *MegaBoot*. You must set *MegaBoot* as your Set Start-up application.

The Big Picture comes with a disk that has a system patch program in the form of a System file that the Mac's new ROM reads upon start-up. To make the Mac use this patch, you simply place a copy of it (all of 2K) in your System Folder. It won't modify your System file.

Radius's system software is the simplest. It's all in ROM on the Radius circuit board, so you don't have to worry about putting an extra file on your system disks. As with the Big Picture, the FPD circuitry detects the connection of the external monitor upon start-up. If no monitor is connected, video output automatically heads to the internal screen.

Getting Physical

"Big-Screen Specs" compares the sizes of the three screens. The diagonal measure of screen size is much less important than the actual number of pixels on the screen display. In addition, the orientation of a screen (landscape versus portrait) plays a crucial role in determining which screen is appropriate for the applications you typically run.

Big-Screen Specs

	Macintosh	Big Picture	MegaScreen	Radius FPD
Mechanical				
Screen size (diag.)	9″	17″	19″	18″
Orientation	landscape	landscape	landscape	portrait
Footprint (screen + computer)	9½″ x 9¾″	20″ x 20″	27″ x 15″	21¾″ x 13½″
Display Characteristics				
Pixel display	512 x 348	1024 x 808	1024 x 900	640 x 864
Pixel density (dpi)	72[1]	80	70	77
Screen refresh rate (Hz)	60	60	58	67
Hardware Issues				
Video RAM[2]	22K	128K	128K	128K
Mac modifications		clip-on board	clip-on and solder	solder and 68000 socket
Macintosh fan		yes	yes	in monitor
Installation		dealer	dealer	factory
Drill holes		no	yes	no
NTSC video output	no	no	yes	no
Switched AC for Mac		yes	no	yes
Brightness control	front	front	rear	rear
Software Issues				
Patch software		Resource file	Set Start-up program	FPD ROM
Screen-saver	no	no	no	yes
MacWrite in full screen		yes	no	yes
Switcher-compatible[3]	yes	yes	yes	yes
Screen dump size	4¾″ x 7⅝″	8″ x 10″	Mac screen[4]	8″ x 10″[4]

[1] Varies somewhat from unit to unit.

[2] The three big screens supply their own RAM.

[3] "Save Screen" option must be turned off.

[4] Upper-left corner of screen only.

Applications: Graphics

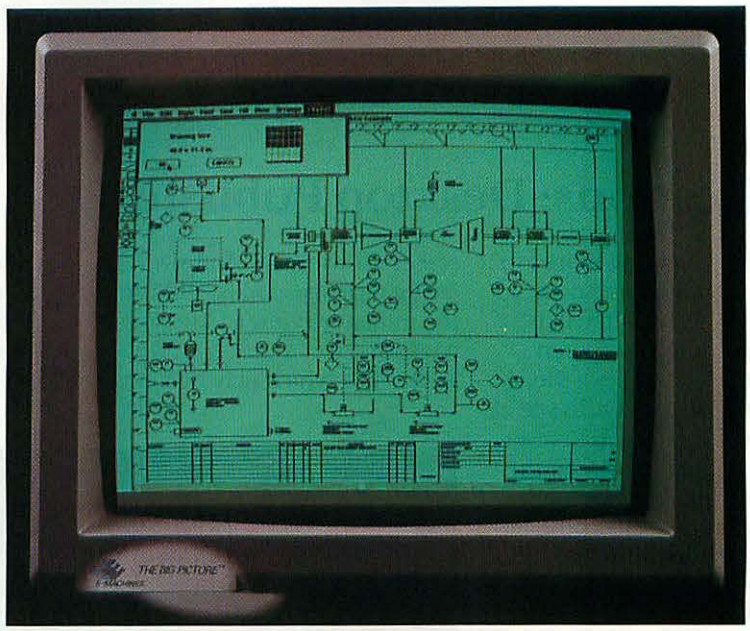
As the most visual of computer-related tasks, graphics benefits tremendously from big-screen monitors. Large drawings and charts can suddenly be viewed as a whole instead of as a collection of details.

Drawing programs such as *MacDraw* can produce clearer renditions of multiple-page drawings. You can build and select larger groups without scrolling as frequently and work with more complete depictions of zoomed views and orthogonal views with dedicated CAD programs such as *EZ-Draft, MacDraft, MiniCAD,* and *MGM Station.* CAD programs that let you manipulate multiple documents have room to juxtapose symbol libraries alongside architectural and engineering plans.

Paint programs like *GraphicWorks* take advantage of increased screen area by supplying bigger normal and magnified views. Most programs are limited to 8- by 10-inch portrait documents. *GraphicWorks* lets you work with opposing pages with its ShowPage option. Programs that permit multiple windows and documents have more flexibility for cutting and pasting between clip-art libraries and composite images. Before buying a big monitor, however, keep in mind that not all paint programs currently let you view documents larger than the Mac's screen.

Solids-modeling programs like *Pro3D* provide better multiple views of an object and let you build larger models. Since the number of polygons, rather than the image size, determines program performance, you can benefit from larger views without any degradation.

Presentation graphics programs like *CricketGraph* and *More* enable you to view larger and more detailed charts with fewer restrictions on the width of labels and legends. Charts and data windows can be viewed simultaneously, letting you make adjustments to either more easily while viewing results. Be careful, however, since some screen makers have reported incompatibility problems with programs like *MacSurf* and *MacSpin.*



MacDraft *on the Big Picture*

Of the three monitors, the FPD takes up the least amount of space. The larger screens, combined with a Mac, have the potential to take over your entire desk. E-Machines, at least, designed the rear area of its monitor chassis so that you can partially nest the Mac behind it while retaining relatively easy access to the internal disk drive.

Sizing Up the MegaScreen

Although it was the only one of the three models I tested that was not a prerelease unit, the MegaScreen was the least impressive.

While the controlling software allows the pointer to traverse the screen with one swing of your wrist, the cursor action on the screen is sometimes jerky when you move slowly. Unless you're good with a mouse, you'll have difficulty pinpointing graphics-palette tools in programs like *FullPaint.* The manual suggests adjusting the mouse action in the Control Panel to the Tablet setting, which establishes a one-to-one relationship between mouse and screen movement. This means, however, that you must devote a MegaScreen-size portion of your desk to mouse operations. Also, in my test the monitor stretched images slightly in a horizontal direction more than the other monitors. This particularly affected circles and text characters.

In addition, the MegaScreen's fan was so loud it drowned out an HD-20 fan and a space heater in my office. The connector cable that permanently dangles from the security hole complicates the process of packing a Mac for traveling. And the MegaScreen was the only monitor that failed to provide a power outlet for the Mac—which means it took up one more outlet on my already crowded AC power strip.

Just as this article was going to press, MicroGraphic announced that it was bundling the *Visions-Plus* software interface with the MegaScreen. Developed by Software Labs of Fremont, California, *Visions-Plus* enables a Mac-MegaScreen combination to emulate the VT-100, Tektronix 4014, and D200 computers. You can also attach up to four MegaScreen units to a host computer, such as the DEC Microvax II, running UNIX, VMS, or AOS/VS. *Visions-Plus* lets you divide the display into terminal windows of various sizes to show multiple processes running on the host computer. This software could be useful if, for example, you wanted to turn your big-screen Mac into a graphics workstation.

One factor in the MegaScreen's favor is that its 1024- by 900-pixel display is the largest of the three: 5.26 times the area of the Macintosh internal display. The MegaScreen is exactly twice as wide as the internal Mac screen, and it's 2.63 times deeper.

Getting the Big Picture

E-Machines' big-screen entry is slightly smaller than the MegaScreen, measuring 1024 by 808 pixels, or 4.75 times the area of the Mac screen. Despite its comparatively shallow display, the Big Picture is capable of displaying up to 10.5 inches down a page.

The Big Picture's display surface—the phosphor applied to the inside of the picture tube—is different from that of virtually any consumer-priced microcomputer. The surface is called *paper-white* phosphor and has a slight yellow tinge. Those who have witnessed high-end Xerox workstation screens in action will notice a kinship. I like the Big Picture's hue, but it's possible not everyone will.

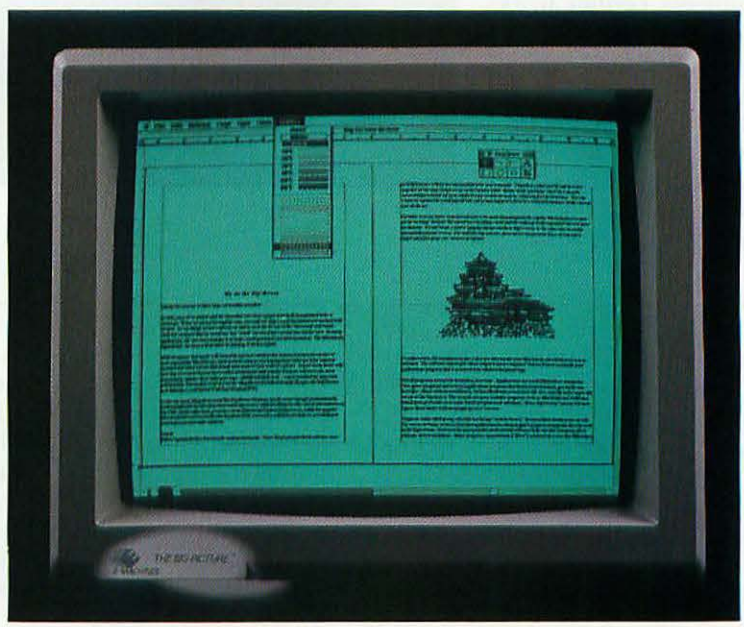
In the lower three-quarters of the screen, the Big Picture appeared to bear out the company's claim of a

Applications: Desktop Publishing

One of the stumbling blocks to productivity with page-makeup software on the Macintosh is that the internal Mac screen lets you see very little of the page you're designing. To see what you're doing, you have to switch constantly between the window for placing elements and the view that shows the entire page in miniature. Big screens put an end to this madness.

All the monitors reviewed here can show you an entire page at full size in the pasteup window. The vertical display of the Radius FPD works well with *PageMaker* version 1.2, because the orientation of a single-page layout is vertical as well. For more precise placement of elements, the Big Picture and MegaScreen's 1024-pixel-wide displays let you see the full active width of a standard *PageMaker* page at a 200 percent enlargement.

Unfortunately, *PageMaker* 1.2 won't let you use the wide screens to view two full-size facing pages; you must still use the miniature view to see two pages at once. Aldus says *PageMaker* 2.0, which may be in distribution by the time you read this, will enable you to work on facing pages in nearly full size on the Big Picture and the MegaScreen.



PageMaker *2.0 on the Big Picture*

higher pixel density than the Macintosh—80 dots per inch versus the Mac's 72. The result is a perceived increase in overall display quality. Geneva fonts, for example, appear to be made up of smooth lines rather than separate dots. Cursor movement is generally smooth, without flicker.

For programs that normally limit the size of an expandable window, such as *MacWrite* version 4.5 or an old edition of *Art Grabber* still in my system, E-Machines' software allows you to stretch windows beyond their usual limit by holding down the Option key while dragging. A planned software improvement will let you select an 8- by 10-inch area of the screen to be saved as a *MacPaint* document when you perform a ⌘-Shift-3 screen dump.

A Full Page and Then Some

Radius, a start-up company formed by three members of the original Macintosh development team, is offering the Full Page Display as its first product. Aided by programming help from the legendary Andy Hertzfeld, the FPD is the only big screen that can work in combination with the Mac screen.

As its name implies, the FPD shows one full page of a text or graphics document. Actually, its 640- by 864-pixel screen is large enough for the European A4-sized page, which is slightly larger than the American 8½- by 11-inch standard.

Thirty-two kilobytes of ROM instructions supplied with the monitor perform such tasks as detecting whether you have the FPD attached (if not, the Mac reverts to its built-in screen). The ROM program also displays a control panel that lets you configure your setup for combination display, FPD only, or Mac only. You can even specify on which side of the FPD your Mac will sit.

Other software touches include an option that switches the menu bar font to 16-point size for increased readability. This is not as trivial as it sounds, since one's tendency with any big screen is to sit further away from it to see "the big picture." You can also convert the cursor, pointer, and dreaded wristwatch to four times their normal size.

At your request, Radius's software will place a zoom box on expandable application windows that don't normally provide one. It's best to keep this option engaged, because the Radius zoom box combined with the ⌘ key lets you instantly switch a window between the FPD and Mac screens.

When both screens are engaged, the Mac screen is like an extra window to one side of the FPD. In a typical installation, the top of the Mac screen is below the top of the FPD; to view different parts of the same window in both screens, you can adjust the "logical" screen height on the Macintosh side. An elevator control in the FPD control panel lets you do just that. As you adjust the control, a test window straddles both displays; you slide the elevator until both halves of the window are even.

Working with a split screen can be practical in some applications, particularly those that use multiple windows or require the frequent aid of desk accessory windows. For example, if you're using *PageMaker,* you can use the FPD side of the display for page makeup and the Mac side for the Tools palette window and the Scrapbook. In an integrated program, such as *Jazz,* you can place separate application windows on each monitor. Or if you're using a multiple-window application, such as a programming language, you can leave windows containing reference material on the Mac screen and use the FPD as your main work screen.

Although having different screens for different windows is valuable, looking at one window on two screens is frequently unsatisfactory—the break in the middle is too distracting. In addition, the pixel densities of the two displays I used were not identical (you can't blame Radius for this; there have been slight variations in the display density of Mac screens over the years), so, for example, spreadsheet rows did not line up between monitors. Also, the different phosphor colors of the FPD and most Macintosh tubes (again, not all Macs are identical) can be rough on the eyes when you're glancing back and forth between screens. Cursor movement is very smooth, though, and moving between screens doesn't slow things down.

Paying the Price

Since any one of these displays costs more than the street price of a Macintosh Plus, a big screen is an investment to make cautiously. None of the displays provided an undistorted image across the entire screen; a purist might reject all three on that account. Other users may not find the degree of distortion objectionable.

Of the two landscape screens, the Big Picture is a more polished product as of this writing. And I don't think many users will pay the MegaScreen's hefty price ($1000 more than the Big Screen's) for the ability to connect its modified Macintosh to a composite TV or projection monitor, especially considering the MegaScreen's roaring fan and jumping cursor.

Because the Big Picture and the FPD cost the same, most purchase decisions will be between these two. You'll then have to examine your applications and documents to see which orientation—landscape or portrait—works best for you. For spreadsheets and graphics, the Big Picture is the only choice. Word processing and forms-driven users should find the FPD quite serviceable. The FPD has the advantage of clever firmware and a smaller footprint than its competitors'. In general, however, the Big Picture will handle practically any application. □

See *Where to Buy* for product details.

MacPaint's Successors

Five paint programs cross brushes to determine the inheritor of the Mac graphics crown



by Adrian Mello

Machines don't have souls, but if they did, the Macintosh's soul would surely be *MacPaint*. *MacPaint*'s charm and elegant design were the initial inspiration of many Mac owners' fascination with the machine, and more than a few Macs left the showroom as a direct result of *MacPaint*'s seductive graphics talents. Since *MacPaint*'s introduction in 1984, however, several other paint packages have appeared: CheapPaint, *MacBillboard, FullPaint, GraphicWorks,* and *SuperPaint.* Most of these programs offer superior features and better value compared with *MacPaint* (see "Features Sketch" for a comparison). Furthermore, new Macs are not bundled with *MacPaint,* leaving new owners to choose for themselves among the contenders for *MacPaint*'s throne.

MacPaint

The Mac's native graphics program is the yardstick for evaluating standard paint features. The newcomers offer most of *MacPaint*'s features, and then some. In *MacPaint* you draw straight and free-form lines of variable densities and patterns with tools like the pencil, the paintbrush, the spray can, and the straight line tool; specialized tools let you draw circles, rectangles, and polygons. You select areas of a drawing with a rectangular marquee or a lasso (for more precise selections) and manipulate them in various ways: flip, rotate, duplicate, or resize, to name a few. A text tool lets you add different fonts, styles, and sizes of text, but the characters are only pictures, or *bit maps,* and can't be edited as with a word processor.

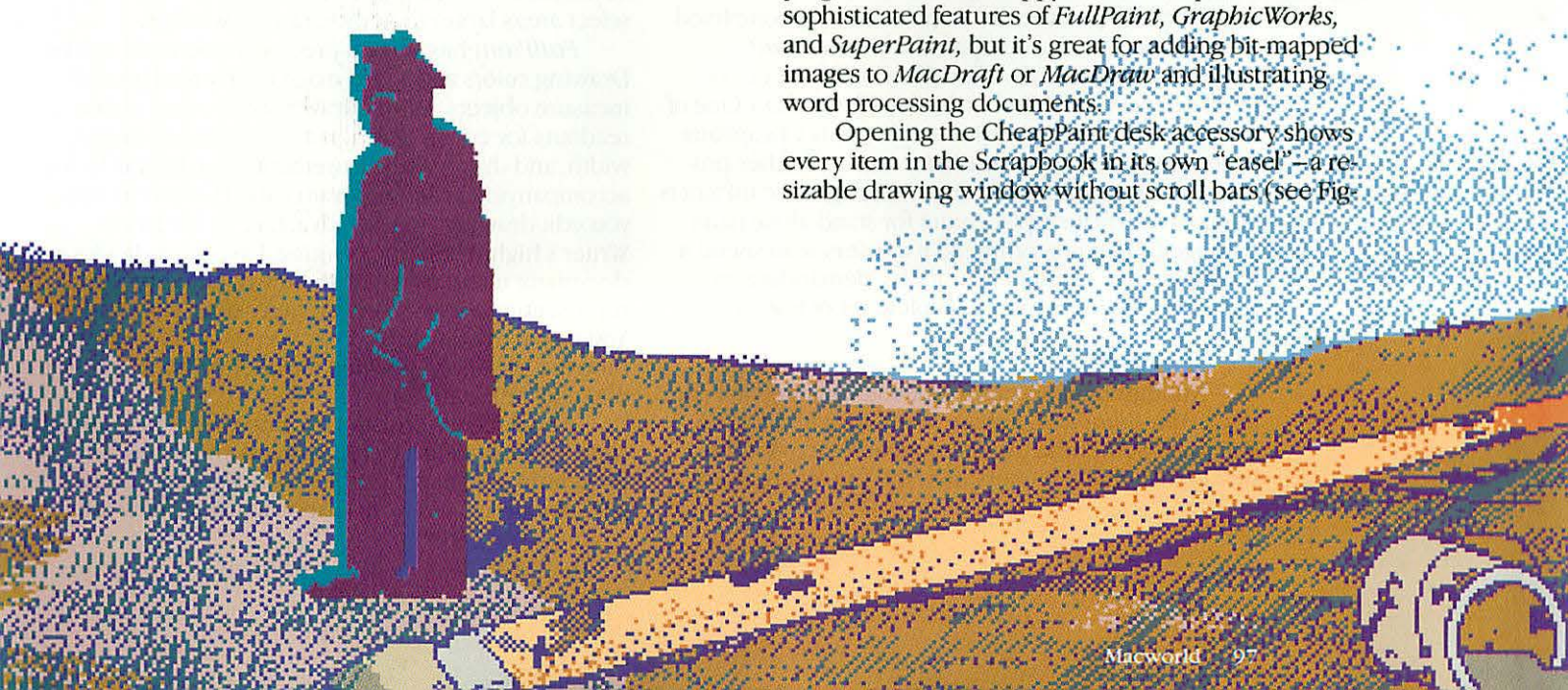
One of *MacPaint*'s most useful features is FatBits—a magnified view that lets you edit individual pixels. Other standard features include a reduced view of an entire page, an Undo command, and a paint bucket, which lets you fill shapes with different patterns. The program's chief limitations are its lack of scroll bars and its inability to work with multiple windows.

MacPaint's programmer, Bill Atkinson, deserves recognition for laying the foundation for the more powerful paint programs that have followed. However, Apple's decision not to upgrade the current version of *MacPaint* has made the program uncompetitive in terms of features and value.

CheapPaint

If you like the idea of having a paint program available for on-the-spot illustrations, consider CheapPaint. CheapPaint is a desk accessory that works with the Scrapbook to let you create, edit, and save bit-mapped drawings within many applications. Furthermore, CheapPaint uses only 27K of disk space, making it a good choice for Mac owners who want to combine programs on 400K floppy disks. CheapPaint lacks the sophisticated features of *FullPaint, GraphicWorks,* and *SuperPaint,* but it's great for adding bit-mapped images to *MacDraft* or *MacDraw* and illustrating word processing documents.

Opening the CheapPaint desk accessory shows every item in the Scrapbook in its own "easel"—a resizable drawing window without scroll bars (see Fig-



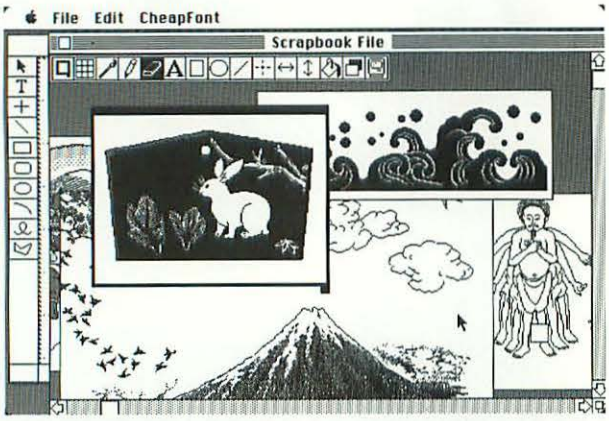


Figure 1
In CheapPaint all drawing and text entry are accomplished within easels. The CheapPaint window (with scroll bars) serves only as a background. Specialized tools let you cycle through buried easels and change Scrapbook files.

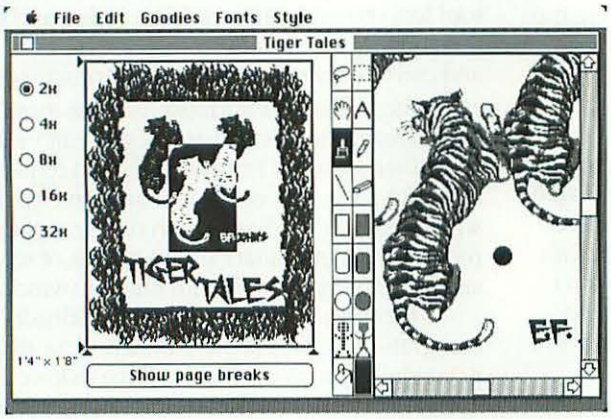


Figure 2
This book cover design demonstrates MacBillboard's *split-window editing feature. The full page is displayed on the left and includes buttons for sizing enlargements and cropping arrows for choosing a specific section of the drawing for printing. The small figures near the bottom of the tool palette let you increase or decrease drawing magnification.*

ure 1). In addition to editing Scrapbook drawings, you can select a new easel and create a drawing on the spot.

CheapPaint provides about 85 percent of *MacPaint*'s features in a simpler, if slightly less serviceable, package. *MacPaint* feature equivalents include pencil, paintbrush, paint bucket, circle, rectangle, line, text, selection rectangle, eraser, and a single magnification similar to FatBits. Notable exceptions are the spray can and the lasso. In terms of performance, CheapPaint is adequate. Text entry is responsive, but wide, rapid sweeps of the paintbrush or the eraser are completed with a noticeable lag compared with *MacPaint*.

CheapPaint is one of a collection of utilities offered on the MacroMind Utilities Disk (M.U.D.). One of the utilities, Art Grabber+, complements CheapPaint by letting you transfer *MacPaint* files into other programs with a minimum of fuss. Although CheapPaint is often an adequate replacement for stand-alone paint packages, I don't recommend it to users who spend a lot of time fine-tuning illustrations; demanding applications require a more complete set of features.

MacBillboard

Another bargain-basement entry in the paint contest is *MacBillboard,* a shareware program from CE Software. Sometimes, in the dogged search for the best deal, bargain hunters miss the fire sale upstairs. Even at $35, *MacBillboard* is not much of a bargain compared with competing paint programs–already among the best buys in Macintosh software. Still, it does have a generous set of features, including three bit magnification levels and a marquee that scales selections down to one-quarter size and enlarges up to ten times (for a more complete review, see *Reviews,* November 1986). You can edit pictures in the regular graphics window and simultaneously view the results in a reduced full-page view (see Figure 2). As implied by its name, *MacBillboard* lets you print banners and poster-sized images up to 32 times their original size.

Despite its numerous features, *MacBillboard* lacks polish. The program has an unrefined appearance and poor screen performance. Characters appear on screen long after you type them, and languid visual feedback makes it difficult to reposition images and select tools accurately. I recommend *MacBillboard* only to the most frugal software buyers. If you like the program's mix of features, you can get a more polished product with similar features by spending a little more money on *GraphicWorks.* On the bright side, the program's shareware distribution scheme lets you test-drive the program before deciding whether you want to buy. And as shareware, the program promises to be continually upgraded at no cost to the user.

FullPaint

FullPaint might just as well have been labeled "*MacPaint* version 5.0." The program bears a striking resemblance to *MacPaint* but is quite literally full of improvements (see *Macware Reviews,* September 1986). *FullPaint* makes use of the entire screen by letting you hide the menu bar and scroll bars, as well as hide and reposition palettes. You can also open up to four documents at once, each appearing in its own window. With multiple windows, you can cut and paste among several documents, use the windows as clip art palettes, or compare drawings side by side. Other significant improvements include a full complement of keystroke shortcuts, special effects, and the ability to select areas larger than the drawing window.

FullPaint has several precision-oriented features. Drawing rulers and a grid make it easy to align and measure objects. As you draw a shape, you can see readouts for cursor position and the shape's height, width, and diagonal measurements (see Figure 3). An accompanying utility program called LaserPrint lets you edit drawings to take advantage of the LaserWriter's high-resolution printing. LaserPrint divides a document into either 4 or 16 new documents, each representing a subsection of the original document. You can then edit each subsection in detail and recombine the enhanced drawing for laser printing at 150 or 300 dots per inch.

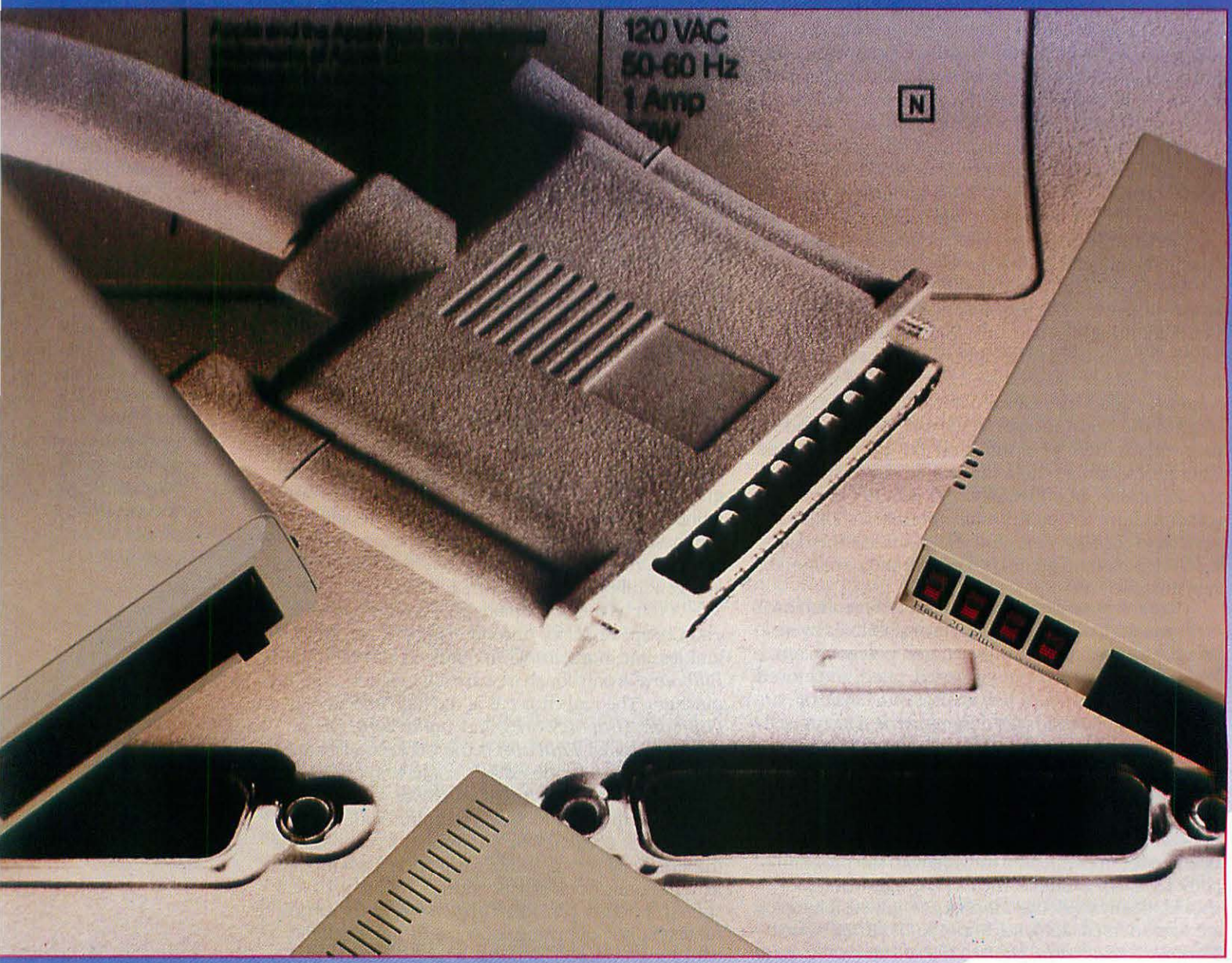
Ann Arbor Softworks has improved *FullPaint* since its first release by removing copy protection–the program's only major problem. Copy protection has also been removed from LaserPrint, and a new utility

Features Sketch

	MacPaint	CheapPaint	MacBillboard	FullPaint	GraphicWorks	SuperPaint
General						
Version reviewed	1.50	1.00	4.01	1.0 Enhanced	1.00	0.95
Minimum memory required	128K	512K	512K	512K	512K	512K
Save/open MacPaint files	●	n/a	●	●	●	●
Save as PICT file		n/a				●
Application size	59K	27K	99K[1]	147K[2]	158K[3]	140K
Price	$125	$49.95	$35	$99.95	$79.95	$99.95
Screen Layout						
Full-screen drawing window				●	●	●
Movable (M)/hidable (H) palettes				M, H	M, H	H
Number of windows open at once	1	disk space	1	4	disk space	10
Number of documents open at once	1	scrapbook	1	4	1	10
Scroll bars		●	●	●	●	●
Selection tools autoscroll			marquee, lasso selections	marquee		●
Autoscrolling tools			line and shape tools	FatBits	panels and easels only	all
Levels of magnification	1	1	3	1	3	3
Reduced view of page	●		live and adjacent	●	●[4]	●[5]
Positioning on page	●		●	●	●	
Select entire document			●	●	●	●
Drawing Features						
Object-oriented drawing						●
Layers					●	2
Editable brush shapes			●	●	●	●
Paint bucket fills off-screen	●	●	●		●	●
Arc						●
Draw shapes from center						●
Line-angle constraint	45°, 90°	45°, 90°	45°, 90°	45°, 90°	45°, 90°	30°, 45°, 60°, 90°
Special effects[6]				●		[7]
Trace edges	●		●	●	●	
Adjustable spray (area, density)					●	
Grid	●			●	adjustable	[7]
Rulers, readouts				●		[7]
Transparent drawing	●	●		●	●	●
Text						
Custom font-size selection				●		[7]
No white rectangle surrounding text		●	●	●	bit map only	paint or draw
White text on black background			●	●		draw
Text wraps in block					●	draw
Autoscrolling text			[8]			draw
Mix fonts, styles, sizes in block					●	
Return to text block and edit					●	draw
Type text with fill pattern						●
Printing						
ImageWriter scaling		n/a	●	●	●	●
LaserWriter scaling		n/a	●	●	●	●
Laser fonts		n/a			●	●
Gray-scale patterns		n/a				●
300-dpi editing		n/a		●		●
Make posters		n/a	●		●	
4-fold card printing		n/a	●		●	
Color printing		n/a	●	●		[7]

[1] MacBanner – 51K.
[2] LaserPrint – 23K and ColorPrint – 62K.
[3] PosterMaker – 34K.
[4] Shows active, adjacent full-page view or inactive, reduced view of 2 adjacent pages.
[5] Shows adjacent but partial page only.
[6] Includes distort, skew, 1° rotations, perspective.
[7] Manufacturer promises these features for version 1.0 (except readouts).
[8] Text goes off edge of screen.

● A bullet indicates that a program does have the feature in question; a space means it doesn't.



PHOTOGRAPHS BY FRED STIMSON

Shopping for SCSI Storage

A guide to selecting a SCSI hard disk and tape drive

by Rick LePage

When Apple added the Small Computer Systems Interface (SCSI) port to the Macintosh Plus, it opened the door to a flood of high-performance peripherals. In the pre-SCSI days, disk drives were scarce and slow, and tape drives were nonexistent. Nowadays, hard disks and tape drives are easy to come by, and you can add up to seven drives without tying up the Mac's modem and printer ports.

But while SCSI storage products for the Mac have become plentiful, selecting a drive from the crowd can be a bit confusing.

What follows are some guidelines to keep in mind when shopping for SCSI storage. Factors like addressing, expansion capabilities, servicing and support, the availability of cables, and above all, stable driver software will play an important part in your decision. Because different options are appropriate for different situations, you should first determine your needs and then select the features you can't do without (see "Hard Drives Compared").

Changing Addresses

You can daisy-chain up to seven devices to the Mac's SCSI port. Generally, it won't matter which device is first or last, but each unit must have a unique address that the Mac can recognize. If you don't plan to connect more than one SCSI device to the Mac, then addressing is not really a concern. But once you add another SCSI device, you will need to check the address of each drive.

The device address, a number from 0 to 6, is usually changeable on the drive's controller. Iomega's Bernoulli Box has a switch in the back that allows you to easily change the address. Other devices let you change the address by opening the drive and moving a few jumper pins. For example, the MacBottom SCSI, from Personal Computer Peripherals Corporation, has a removable vent that enables you to access the jumpers without having to take apart the entire drive. Generally, changing addresses is a simple task, but you should be aware of the different ways in which various drives handle the address options.

Because most hard drives are configured for address 0, if you wanted to add a second drive, you (or your dealer) would probably have to change the drive's address. One final point about addressing: the Mac will start up from the device with the highest SCSI address, so if you're using multiple hard drives, the one with the highest address will be the start-up drive.

Satisfaction Guaranteed

Most SCSI devices come ready to plug in and use, with at least a 90-day warranty on parts and labor. There's always a chance that something might go wrong, so make sure you understand the manufacturer's warranty procedures and policies. If you buy from a mail-order house or directly from the vendor, ask a few questions first: Are you guaranteed that the drive will be repaired within a certain time? Will the dealer service the drive, or must you mail it back to the manufacturer? Who will pay for shipping and handling?

Chaining Drives

Some manufacturers supply all the cables necessary for hooking up the drive, while others don't, so make sure you get all the cables when you pick up your unit. What type of connector is on the end of the drive? Some drives require the 50-pin Ampherol con-



MDIdeas TDBK-20+
The TDBK-20+ tape drive can daisy-chain to any SCSI hard disk. The drive makes an image backup to a tape cassette.

nector, while others use a 25-pin RS-232C type. Consequently, you might need an adapter cable to switch from one type to another.

Termination is another factor to consider. The SCSI specification calls for a terminator before the first and last drive in the chain. While most drives come with internal terminators, some require you to attach a terminator block in line with the SCSI cable.

The length of the SCSI cable is also important, since most drive cables are so short that you must place the unit directly next to the Mac. Some of the newer drives come with 6-foot cables, making it easier to minimize noise and ventilation problems.

Anatomy of a Disk Drive

Hard disk drives are the most common SCSI devices available at present. With the increase in the number of drives has come a proliferation of storage sizes. You can now purchase drives in capacities from 20 to 160 megabytes and beyond, which should be more than adequate for most small-business needs.

SCSI drives essentially consist of two parts, the controller and the drive unit. With most of the early Mac SCSI drives, the two parts were made by separate manufacturers and combined by a third. More recent offerings incorporate an integrated drive and controller subsystem made by one manufacturer.

Integrating a controller and drive usually results in lower cost and higher performance. Rodime and Seagate currently supply integrated controllers and drives to several Macintosh disk drive manufacturers. The Seagate 225N drive offers a sophisticated real-time diagnostic test that attempts to read and remap bad blocks on the disk surface without the user's intervention.

Boosting Performance

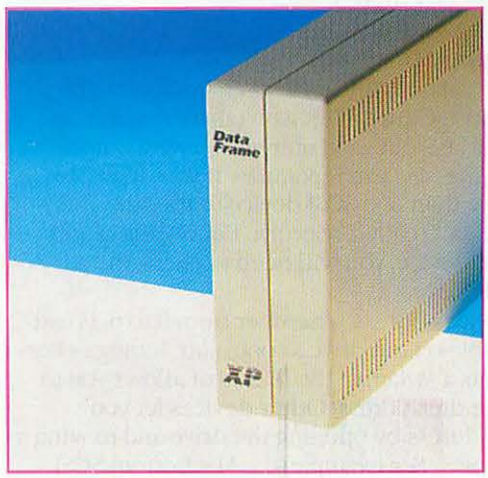
When they were announced, SCSI hard disks were touted for their speed—SCSI transfers data at 320K per second, over ten times faster than the serial ports. However, even though the drives themselves are fast—the average access time, the time it takes for the disk to position the read/write head, ranges from 20 to 65 milliseconds—most drives transfer data faster than the Mac's CPU can process it. Until someone introduces a faster CPU or a disk controller capable of writing directly to memory, the performance differences between most drives will be minimal.

In spite of the CPU bottleneck, several manufacturers, most notably Micah and SuperMac Technology, have optimized performance by either modifying the drive's controller software or the SCSI Manager software in the Mac's ROM. SuperMac Technology took the latter approach with its DataFrame XP series, which it claims is up to twice as fast as competing drives. The DataFrame XP requires that a small circuit board be mounted in the Mac Plus's ROM socket; then the Mac's ROM is inserted in the board. Although SuperMac modifies the data format to improve performance, the drive is still SCSI compatible—other SCSI drives should operate with the modified Mac, but they won't exhibit the increased speed.

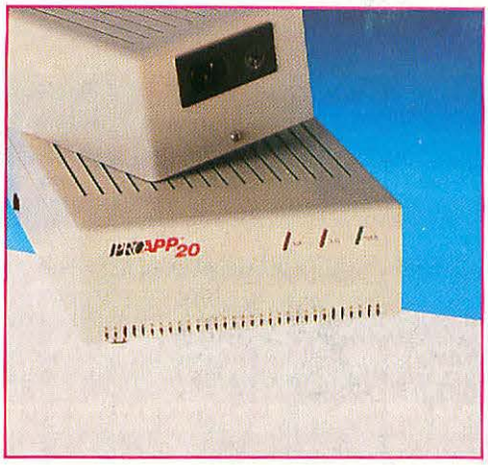
Utility Software

You should also consider what type of software comes with the drive. All manufacturers provide a disk format utility, but not all include software to run diagnostic tests on the drive. If you are not purchasing a tape drive, find out if the hard disk comes with software to back up the data onto floppy disks. Furthermore, you should look for software that lets you back up the entire disk (image backup), selected files or folders, or only files that have been updated (incremental backup).

Other types of bundled software include print spoolers and networking software. Some manufacturers, such as General Computer and Micah, include disk management and utility software.



SuperMac's DataFrame 40 XP
The 40 XP uses a modified form of the SCSI data format, which SuperMac claims can double disk performance speed. To take advantage of the performance boost, you must install a board in the Mac's ROM socket.



ProApp 20
The ProApp 20 works with the Apple IIe and IIc and the 128K and 512K Mac (via the floppy port) or the Macintosh Plus (via the SCSI port). You can create separate partitions for Apple II and Mac files.

Noise and Portability

In a quiet room, noise can be a problem. If you're concerned about it, listen to your top contenders as they run. Although drives without fans run more quietly, most of them get hotter. A drive without a fan won't necessarily burn out, as long as it's vented correctly and the air flow isn't blocked by other equipment.

Portability is also an important consideration. Some drives are easy to carry, which is nice when you have one Mac at home and another at the office. Larger-capacity drives and combined tape-and-hard-disk drives are not well suited for frequent transporting. If you need a portable drive, look for one with either an automatic or software head-parking option, which retracts the heads from the drive surface when not in use. A parking option ensures that the head won't scratch the disk surface if the drive is jostled, which would wipe out your data.

A Backup a Day

Although most computer users are dutifully drilled on the necessity of backing up data, few do it regularly. Often this is because copying data from one disk to another can be time-consuming, especially when you're copying to floppy disks. But with the right software, a tape drive can save you time and money and increase your efficiency as well.

Tape drives for the Mac are currently available in 20-, 40-, and 60-megabyte ranges and are either stand-alone units or combined with hard disks (see "Tape Drives Compared"). The smaller-capacity drives usually save the data on a cassette tape, while the higher-capacity units generally use a larger cartridge. Cassettes are usually cheaper than cartridges, though the two are fairly close in price. As with hard disk drives, the differences in tape-drive speeds can be inconsequential.

Another alternative to the backup dilemma is a disk drive like the Bernoulli Box, the Univation Slimline series, or the Amcodyne PhD; all have removable cartridges that you can use to back up essential data.

Backup Software

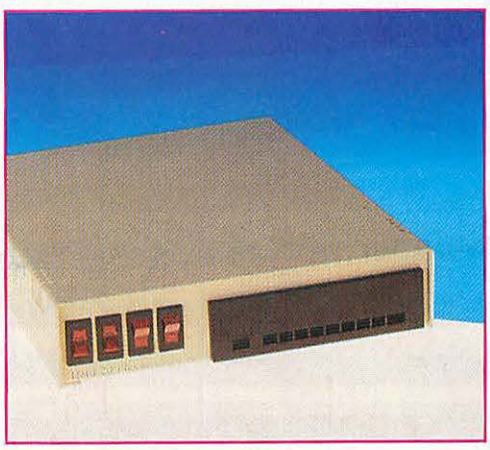
When evaluating a tape drive, you should check to see if the software allows image backups, selective backups, and incremental backups. Also find out whether you can restore individual files from the tape.

Those with large-capacity hard drives should see how the tape drive handles backups when the disk's capacity exceeds that of the tape. Does the software prompt you for another tape, or are you limited to one?

Getting into the habit of backing up regularly is easier with well-designed incremental backup software. You can also use it to maintain a log of the backups for reference when a problem arises. Another convenient feature to look for is the capability of listing a tape's contents. And Mirror Technologies and Peak Systems both offer automatic backup, an ideal way to maintain network servers or heavily used disks. A boon to forgetful users, this feature will back up a disk at a preassigned time, whether or not you're there.

All in One

Finally, you must decide whether you want a SCSI device that combines a hard disk with a tape drive (see "Combination Drives Compared"). The advantages of a combined disk-and-tape unit are low cost and functionality. In a combined unit, the disk and tape are designed to work together with a minimum of hassles. The combination drive should have software that makes it easy to back up to tape. Some drives (like the AST-2000) even have software that lets you use the tape drive like a disk. However, you should be aware that some combined tape drives cannot back up other SCSI disks.



Relax Technology's Hard 20 Plus
The Hard 20 Plus incorporates the Seagate 225N drive and contains four switched power outlets with noise filtering and surge suppression.

(continues)

f = security
g = mount volume
h = format

New on the Desktop

The gap between the Mac and dedicated publishing systems continues to narrow

by Jim Heid

The first generation of desktop publishing programs was intended for relatively simple tasks such as turning out brochures and newsletters. But soon greater performance was demanded as users learned more about typography and layout, and corporate graphics departments sought quick type turnaround for more sophisticated projects like producing annual reports and display advertisements.

Response to these demands has come in the form of a new generation of software that includes *ReadySetGo* version 3.0, *PageMaker* version 2.0, *LetraPage* (formerly *MacPublisher*), *Ragtime*, and *Solo*. What follows is a preview of the capabilities and operating styles of these programs, together with a comprehensive table of statistics, to guide you in making the right buying decision (see "Feature-by-Feature Comparison").

More and Better-Looking Text

All the programs share the ability to create publications of expanded length. Combined with automatic page-numbering, this makes for easier handling of projects like manuals and books. Improved typographic control is another common characteristic; *PageMaker*, *ReadySetGo*, *LetraPage*, and *Solo* allow more precise control over type by offering both automatic and manual kerning.

PageMaker, *ReadySetGo*, and *LetraPage* also provide automatic hyphenation. End-of-line hyphenation can greatly enhance the appearance of justified (aligned left and right) text and, to a lesser extent, text with ragged right margins. There are two approaches to hyphenation.

Algorithmic hyphenation divides words according to the rules of spelling. One such rule states that when two consonants fall between two vowels, the word should be divided between the consonants. However, numerous exceptions can be found to this rule—for instance, the correct hyphenation for the word *program* is *pro-gram*.

A more accurate but slower way to hyphenate compares words against a dictionary linked to the program. *PageMaker* and *LetraPage* both provide dictionaries to which you can add words.

However, the best approach may be a combination of algorithmic and dictionary-based hyphenation. *ReadySetGo* 3.0 hyphenates according to the rules but also lets you add problematic words like *program* to an exception dictionary.

Ragtime, *ReadySetGo*, and *Solo* make it more practical to write and revise text within the program itself. *ReadySetGo* 3.0 provides a spelling checker, *Solo* has a



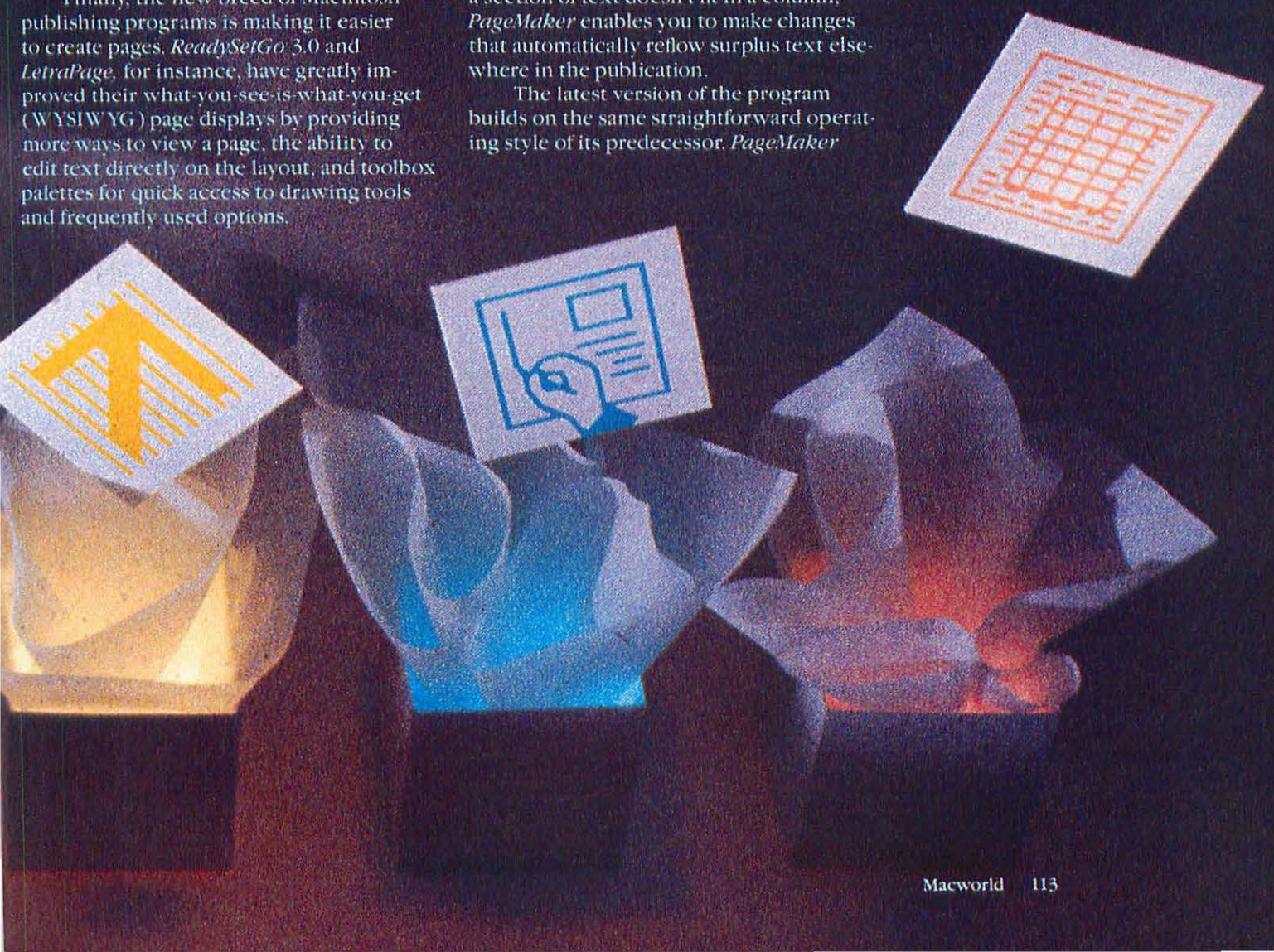
glossary for quick entry of frequently typed phrases, and all three include search-and-replace commands. Nevertheless, no publishing program can replace a sophisticated word processor like *Microsoft Word* for creating and editing large documents—a point acknowledged by most publishing programs in their import of formatted *Word* documents.

Finally, the new breed of Macintosh publishing programs is making it easier to create pages. *ReadySetGo* 3.0 and *LetraPage*, for instance, have greatly improved their what-you-see-is-what-you-get (WYSIWYG) page displays by providing more ways to view a page, the ability to edit text directly on the layout, and toolbox palettes for quick access to drawing tools and frequently used options.

PageMaker

The premier version of Aldus's *PageMaker* set the standard for ease of use. The program's *pasteboard* metaphor makes electronic layout similar to mechanical pasteup. After specifying a page's overall layout—its number of columns, dimensions, and horizontal or vertical orientation—you lay down text or graphics. When a section of text doesn't fit in a column, *PageMaker* enables you to make changes that automatically reflow surplus text elsewhere in the publication.

The latest version of the program builds on the same straightforward operating style of its predecessor. *PageMaker*



2.0's most noteworthy improvements are its 128-page publication length (versus version 1.2's 16-page ceiling), tabloid page size, automatic and manual kerning, and automatic, dictionary-based hyphenation (see Figure 1). Other enhancements include minor fixes to on-screen rulers, the ability to change a publication's horizontal or vertical orientation after element positioning, and printing options that let you produce reversed pages and "mirror" images.

All in all, these improvements have made a good product even better; *PageMaker* excels at producing any publication that doesn't demand advanced text-manipulation features such as automatic footnotes, tables of contents, or indexes. According to Aldus, publications created with the new IBM PC version will be compatible with those made with the Mac version, and vice versa–a potentially valuable capability for offices with networks containing both PCs and Macs.

Ragtime

Orange Micro's *Ragtime* has what integrated software on the Macintosh should have: a spreadsheet for crunching numbers, a capable word processor for editing text, and page-layout features that take advantage of the Mac's graphics and fonts (see Figure 2).

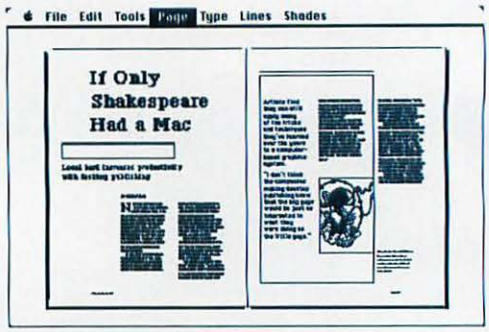


Figure 1
PageMaker *2.0 lets you view and alter two-page spreads in any of five magnification levels. The latest version of this publishing best-seller can also create documents of up to 128 pages, and it features automatic and manual kerning and dictionary-based hyphenation.*

Feature-by-Feature Comparison

	PageMaker 2.0	ReadySetGo	LetraPage	Ragtime	Solo
Publication Layout					
Maximum document length (pages)	128	disk	disk	350	35 (512K); 90 (1MB)
Maximum columns per page	unlimited	unlimited	48	unlimited	unlimited
Maximum page size (inches)	17 by 22	17 by 22	17 by 22	11 sq. feet	11 by 17
Multiple open publications		●		●	●
Column guides	●	●	●		●
Preset page designs		●			
View and alter two-page spreads	●	●	●		●
Number of view levels	5	4	10	2	7
On-screen rulers	●	●	●	●	●
Automatic page numbering	●	●	●	●	●
Table-of-contents generation			●		
Index generation			optional		
Smallest positioning increment	1 point	1 point	1 point	1 point	1 point
Group command for combining objects		●	●		●
Text Editing and Formatting					
Edit text directly on layout	●	●	●	●	
Automatic reflow after editing	●	●	●	●	●
Automatic footnoting					
Tabs	●	●	●	●	●
Decimal tabs	●	●		●	●
Search and replace		●		●	●
Global font/style changes		●		●	●
Spell checking		●			
Mixes fonts on same line	●	●		●	●
Opens text-only documents	●	●	●	●	●
Opens formatted Word documents	●	●	●		●
Opens formatted MacWrite documents	●	●	●		●
Glossary		●			●

● A bullet indicates that a program does have the feature in question; a space means it doesn't.

Unlike *PageMaker, Ragtime* works on the concept of *frames.* You draw a frame on the page and then specify whether the frame holds text, a spreadsheet, or a picture. Here you encounter the primary difference between *Ragtime* and other integrated packages: spreadsheets from *Jazz* or *Microsoft Works* appear in separate windows, requiring a cut-and-paste operation to include spreadsheet data in a text document. With *Ragtime,* however, the spreadsheet is part of the publication; changes in the figures are automatically reflected in the word processing document.

Ragtime's approach to reflowing edited text over columns or pages is efficient; you create *pipelines* between separate frames by clicking a palette icon and then drawing a line between the frames. Subsequently, *Ragtime* automatically routes carryover text as you edit.

Only *Solo* also has a *Ragtime* feature that should be included in every publishing program: a search-and-replace command for fonts and type styles, which makes short work of changing a publication's overall appearance.

Ragtime has fewer publishing features than other products; it lacks precise typographic controls, automatic hyphenation, an extensive palette of patterns, and the ability to import formatted *MacWrite* and *Word* documents. But *Ragtime* is easy to use and suitable for producing documents with calculations or tabular information brought in from its spreadsheet.

ReadySetGo 3.0

Manhattan Graphics' *ReadySetGo* 3.0 resembles its predecessor in name only. The new version includes additional options such as automatic hyphenation, kerning, and spell checking. It boasts a re-

Feature-by-Feature Comparison

Much of the information included in this comparison of desktop publishing program features was based on prerelease software and input from manufacturers. Prior to purchase, you should make sure a product actually has the features you need.

	PageMaker 2.0	ReadySetGo	LetraPage	Ragtime	Solo
Drawing and Graphics					
Number of rule types provided	8	5	7	1	1
Number of rule weights provided	9	6	[1]	5	10
Boxes	●	●	●	●	●
Circles	●	●	●		●
Shadowed boxes			●	●	
Round-cornered boxes	●	●	●	●	●
Changes radius of rounded corners	●		●		●
Bit-map drawing tools					●
Fill patterns provided	8	39	[1]	1	39
Pen patterns provided	8	39	[1]	1	39
Graphic rotation commands					●
Directly opens PICT documents	●	●	●	●	●
Directly opens MacPaint documents	●	●	●	●	●
Proportional graphic scaling	●	●	●	●	●
Graphic cropping	●	●	●	●	●
Embedded PostScript	●	●			●
Typography					
Automatic kerning	●	●	●	[2]	●
Manual kerning	●	●	●		●
Varies letter spacing for justification	●	●	●		●
Variable word spacing	●		●		
Hyphenation method	dictionary	algorithmic	dictionary	n/a	n/a
Hyphenation exception dictionary	●	●	●		n/a
Soft hyphens	●	n/a	●	n/a	●
Minimum font size	4	1	2	1	9
Maximum font size	127	127	127	127	127
Runs type around square shapes	●	●	●		●
Runs type around irregular shapes					●
Automatic leader characters	●	●			●

[1] *LetraPage* lets you combine patterns to produce new patterns, allowing a virtually unlimited number of rule weights and patterns.

[2] *Ragtime* lacks automatic and manual kerning features; however, you can select a "condensed" type style that tightens interletter spacing slightly, which can improve the appearance of large type.

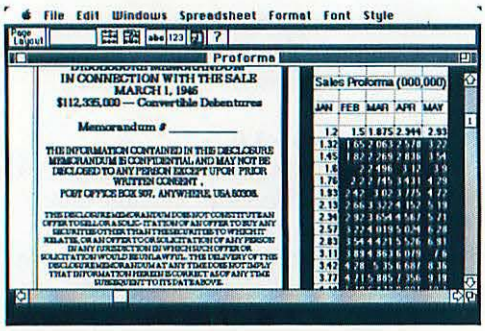


Figure 2

An interesting combination of word processor, publishing program, and spreadsheet, Ragtime *lacks sophisticated publishing features such as hyphenation and kerning, but it's ideal for creating forms and producing publications containing tables.*

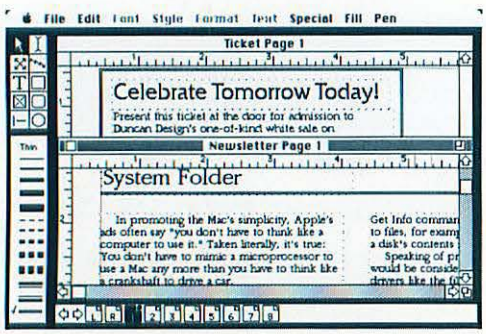


Figure 3

This new version of ReadySetGo *boasts a greatly improved user interface, including fast access to drawing tools and other pages, plus the ability to display a page in various sizes.*

vamped user interface analogous to *PageMaker*'s pasteboard metaphor and includes scroll bars for navigating within a page (instead of the previous version's awkward Show Page window), palettes for fast access to other pages, drawing tools, and the ability to display a page in various sizes (see Figure 3). To give you a head start in designing new pages, *ReadySetGo* 3.0 provides several preset page layouts you can format with a set number of columns and specific types of blocks.

ReadySetGo 3.0 retains a block-oriented structure resembling *Ragtime*'s frames approach. Every graphic or text element is contained in a square or rectangular block. You can specify the size and position of a block using the mouse, or you can use the Block Modification command and dialog box to specify values for precise positioning (most WYSIWYG programs rely solely on the mouse for sizing and positioning).

As with *Ragtime,* you establish text-reflowing links between blocks by drawing connections with a palette tool. *ReadySetGo*'s search-and-replace feature also recognizes links, allowing you to specify a search or replace in a single block, in a chain of linked blocks, or throughout a publication. The program also lets you wrap text around rectangular pictures. Overall, *ReadySetGo* 3.0 does a good job of combining word processing and page layout capabilities, and it lends itself to almost any desktop publishing task.

LetraPage

LetraPage is the new moniker for *MacPublisher II.* The name change occurred last summer when Boston Software Publishers was acquired by graphic arts giant Letraset. *LetraPage* isn't an all-new program like *ReadySetGo;* it's more of a *MacPublisher III,* offering definite advantages over *MacPublisher II* but retaining some of its annoying limitations (see Figure 4).

Like *MacPublisher, LetraPage* divides a publication, called an *issue,* into *articles* and *pictures.* An article or a picture is essentially a text block or frame, except that its text or graphic is saved as a separate file, whereas *PageMaker, Ragtime,* and *ReadySetGo* 3.0 save a publication's design, text, and graphics in one file. The issue is simply a file containing a list of articles and pictures along with their positions. This approach has some advantages. Text alterations are saved in the original file, rather than only in the publication; you can use the same article in other publications without having to duplicate its text; and *LetraPage* automatically creates page jumps (such as *continued on page . . .*) and generate a table of contents by creating a separate article containing a list of all the articles in the publication along with their page numbers.

With *MacPublisher,* the drawback of this approach was that you had to make text-editing changes in the article's window, rather than directly on the layout surface. *LetraPage* eliminates this shortcoming by allowing you to edit and add text directly while viewing in actual size. A new tool palette provides text-editing and drawing tools, as well as one-click access to rulers and other pages.

Although you can avoid screen clutter by altering text directly on the actual-size view, you can't overcome the inability to mix different fonts on the same line, or different font sizes in the same article. Each element must be a separate file that you create, format, and then drag into place. This limitation is especially annoying in jobs that require numerous fonts and type sizes.

LetraPage boasts several unique features, including the ability to print text and graphics in color on an ImageWriter II; to print a document at twice its actual size, resulting in sharper resolution when combined with the ImageWriter's 50 percent reduction option; and to save a page as a *MacPaint* or *MacDraw* document. Like *ReadySetGo, LetraPage* allows precise positioning and is also the only product described here that can automatically color-separate a page.

With its automatic page jumps, its table of contents, and its ability to reuse articles without duplicating their texts, *LetraPage* is best suited for producing periodicals, manuals, and reports. (An optional desk accessory, *LetraIndex,* lets you generate indexes automatically.) Automatic color separation also makes *LetraPage* useful in preparing publications for professional printers.

Solo

Mac America's *Solo* is the Swiss Army knife of page-layout programs, combining a remarkably complete array of drawing features (for both object-oriented and bit-

mapped graphics) with word processing and page-makeup capabilities to provide a fast program that takes up only about 100K of disk space. *Solo*'s unique operating style may require some adjustment, but the rewards are worth the time and effort. *Solo* can perform page-layout tricks (such as wrapping text around irregularly shaped graphics) with an ease that no other Mac publishing program can rival (see Figure 5).

Solo opens with a Finder-like desktop that lets you open new or existing documents as well as perform disk-management tasks. There are icons representing the Clipboard and several specialized windows that control the search-and-replace feature and the text glossary.

While there are significant differences, *Solo*'s approach to publication organization is closer to *LetraPage*'s than to those of the other programs. A publication's text is stored in separate files. Unlike *LetraPage,* however, *Solo* stores graphics in the publication's file, called a *presentation.* You can also use the typing window to create short text elements; these are also stored in the presentation.

Solo is the only program of the five previewed that makes you open a window to edit, rather than altering text directly on the layout. Another significant difference is that *Solo* doesn't show fonts and styles in the text window but represents them using codes. Fortunately, you don't have to remember and type the codes; *Solo* inserts the appropriate code when you choose a font, style, or size from its menus.

Although this code approach goes against the Mac's WYSIWYG philosophy, Mac America claims it has the advantage of letting you quickly make global font and style changes. However, *Ragtime* has the same ability, while still showing fonts and styles.

Moving elements between pages is easy, thanks to the program's ability to scroll an entire publication, not just one page. You simply drag items directly to the desired page. *Solo*'s drawing features combine such *MacDraw*-like features as polygons and arcs with *MacPaint*-like tools such as a spray can, various brush shapes, a pencil, an eraser, and even a FatBits equivalent. *Solo,* however, supports more QuickDraw transfer modes (the way objects appear when other objects overlap them) than *MacDraw* or *MacPaint*. You can also stretch or squeeze text to produce special styles for headlines, a technique replicated in other publishing programs by pasting *MacDraw* text into the program and stretching it. *Solo*'s most impressive feature is its ability to wrap text around irregularly shaped graphics within seconds; the text rewraps if you edit it or change its font or style.

Providing a capsule description of *Solo* is difficult; listing its ideal applications is harder still. It's a capable program that's at home producing a display ad or a lengthy manual. If you can live with its code-oriented approach to font manipulation, *Solo* deserves a closer look.

Making a Choice

When you shop for a desktop publishing program, spend some time with each offering to acquaint yourself with its operating style. All the programs described here are worthy contenders, but each has its own approach to producing printed pages. *LetraPage* and *Solo*'s technique of storing text separately may prove useful for book or manual production. However, it's of little value for short jobs, since editing changes are stored in the original files as well as in the pasted-up text.

Similarly, *Ragtime*'s built-in spreadsheet is useful for producing business reports or complex tables, but its inability to kern makes it unacceptable for jobs that require high-quality output.

Moreover, don't choose a product simply because it has more features. Automatic hyphenation, for example, isn't worth much if you only create documents with ragged margins, and there's no reason to buy a program that produces tables of contents if you don't need them.

Finally, keep in mind that WYSIWYG programs represent only one approach. Code-oriented programs like FTL Systems' *MacTEX* lack the click-and-drag simplicity of the products described here but can automatically generate tables of contents and indexes, and offer finer typographic control.

These WYSIWYG publishing products are narrowing the gap between the Mac and dedicated publishing workstations. With the arrival of full-screen displays and faster Macs, the gap will grow narrower still, and Macintosh publishers will have more and better tools at their disposal. □

See *Where to Buy* for product details.



Figure 4

LetraPage *is an enhanced version of* Mac-Publisher II *and features a tool palette for quick access to layout and drawing tools, plus the ability to edit text in the full-size view, shown here.* LetraPage *generates tables of contents and page jumps automatically, but it won't let you mix different fonts in the same line or different font sizes in the same text block.*

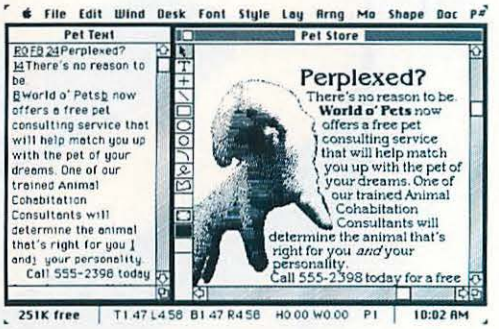
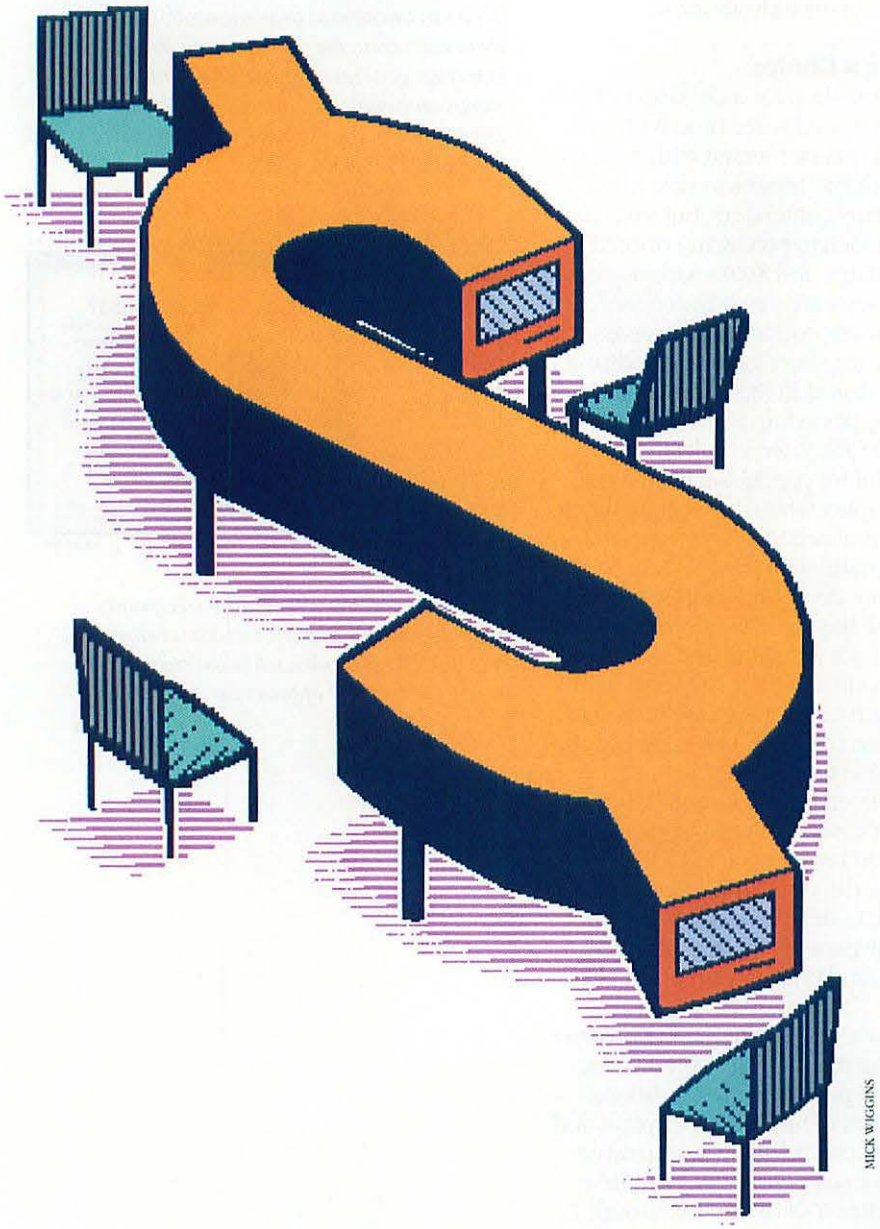


Figure 5

Solo *lets you wrap text around irregularly shaped graphics. The left window contains the text and its font codes, while the right window shows the text as it appears on the page.*

Building a Multiuser



MICK WIGGINS

Learn how to custom-build a multiuser accounting application with Omnis 3 Plus and install it on a network

by Steve Mann

Whether you work for an insurance company, an accounting firm, or an architectural concern, you can probably streamline your business with multiuser computer applications. All you need are a few Macs, a multiuser database program, a hard disk, and some network software. By building a simple multiuser application with Blyth Software's *Omnis 3 Plus*, a powerful database manager, you can begin learning to create and install your own network applications.

A general ledger is an excellent application for demonstrating the value of a multiuser installation. You can create a general ledger in *Omnis 3* and install it on an AppleTalk network running Infosphere's *MacServe* network software. In a small business that does a lot of accounting, one or two employees might enter financial transactions as needed during the course of the day. A third person would be responsible for the overall accounting function and would print and review reports, make adjustments, and close out each accounting period.

The General Ledger

A general ledger is conceptually quite simple. It has three components: a set of accounts, transactions, and reports. The set of accounts includes all important financial categories, such as cash, salary expenses, and equipment. Transactions describe the financial activities of the company, such as paying employees or purchasing a machine, in terms of those accounts. Reports, like an income statement or a balance sheet, summarize the company's financial activities and

Application

status. For our purposes, you needn't be concerned with the details of accounts, transactions, or reports.

You build the general ledger template—or any other application, for that matter—in three general steps. First, you describe the kind of information you plan to store in the database by defining the database's file formats. Second, you create entry formats so that you can enter information in an orderly fashion. Finally, you design report formats that organize and collate specific information in the database.

Building this application demonstrates *Omnis*'s major customization features. The high-level schematic of the finished general ledger shows more detail. You may also obtain a copy of the source code to the general ledger by writing to the author in care of *Macworld,* including a blank 400K or 800K disk in a self-addressed, stamped envelope.

Defining File Formats

You must define two file formats for the general ledger: the account file and the transaction file (see Figure 1). The account file keeps track of the outstanding balances for each account. The transaction file contains the individual transactions that affect those balances.

You define a file format by clicking on successive lines of the *Omnis 3* file definition window and entering a field name of up to eight characters on each line. For each field indicate the appropriate options for data type and field length and whether you want the field indexed (a technique that speeds up searching and sorting on those fields). You also have to indicate that the account and transaction files are related by using the Set Connections choice on the Amend File Format.

Entry Screens

Once you've defined the file formats, you design an entry format that lets users record specific information in the database. The entry format is essentially a form that appears on screen. You create the format in a window in which you define field names and lengths and other field attributes (see Figure 2). To position a field, you just double-click at the place you want it to start, and the program displays a dialog box in which you specify all the details for that field, including a variety of options such as entry checking, calculated fields, or relational lookups.

You can also create an *array.* Arrays can save you substantial development time and irritation, once you understand how they work. Drawing an array rectangle lets you define a single row of fields at the top of the array. When you run the application, *Omnis* automatically duplicates the single line at the top of the array so you can enter the information for multiple lines using those same fields. In addition, you can define grand totals at the bottom of the window that the program updates automatically.

Sequences

You can further tailor entry forms by defining custom function buttons. You assign one or more high-level language programs to each button. These programs, called *sequences,* may include a variety of commands. I've defined function buttons for both the account maintenance and transaction entry formats (see Figure 3). The account maintenance entry form has buttons labeled Insert, Change, Delete, Next, Find, and Quit. The transaction entry format includes Insert and Quit buttons.

Each button is assigned a sequence. Some are simple, others are reasonably complex. For instance, the Change and Delete buttons check for errors, making sure that critical fields are left unchanged and that nonzero accounts are not deleted. The Insert button in the transaction entry format checks to make sure that the total debit amounts equal the total credit amounts. The button also loops through the entry form array and inserts each line in the transaction file.

Reports

The general ledger requires four standard financial reports:

- an income statement, a summary of all income and expenses;
- a balance sheet, a summary of all assets and liabilities;
- an audit trail, a detailed list of all current transactions; and
- a trial balance, a summary of all accounts and their balances.

The income statement, balance sheet, and trial balance are printouts of certain accounts in the account

file. The audit trail is a printout of the transaction file. Each report includes minor calculations as well.

Defining *Omnis* reports is similar to creating entry screens. First, you lay out whatever text you want, specifying the desired fonts and type sizes (which show up only on the final printed version). You then double-click where you want to locate specific data file fields or temporary, calculated variables.

Each report is divided into sections for headings, detail lines, report totals, and so on. You can have up to nine levels of automatic subtotaling and a variety of format combinations. You can also specify sort sequences, output destinations, and search criteria for each report.

Custom Menus

Omnis lets you create custom pull-down menus (see Figure 4). You can attach a group of commands (much like a sequence, only simpler) to each menu choice. For instance, you can print a report, open a file, or activate an entry form from a menu. You can disable all the default menus except for the File and Edit menus, making the finished program look like other stand-alone Macintosh programs.

The general ledger includes two custom menus: GL Processing and GL Reports. GL Processing lets you enter and change account numbers, enter accounting transactions, and perform period-end processing. GL Reports lets you print any of the four financial reports.

Multiuser Installation

Once you've built an *Omnis* application template, whether it's a general ledger or a sales-tracking system, you can run it as a multiuser program. This is where *Omnis 3 Plus* really shines. Just install the network hardware and software, copy multiuser *Omnis* onto your disk server, and start it up. No program modifications are required, although you may encounter some problems installing the network software.

Most network software requires at least one hard disk on the network. *Omnis* runs on several networks including Corvus's OmniNet, 3Com's EtherMac, General Computer's HyperNet, and Sun Mac from Sunol Systems. For this article we started with a 512K Mac and an Apple HD20. We then attached two Mac Pluses with an AppleTalk cable and installed Infosphere's *MacServe* networking software. Both *Omnis* and *MacServe* require at least 512K.

Cabling should not be a problem. AppleTalk is inexpensive and easy to set up. The documentation includes detailed explanations and pictures of how to cable several devices together. Basically, you run cables from one Mac to the next in a daisy chain, attaching a cable to each Mac's printer port.

Installing MacServe

MacServe is a little more complicated to install, mostly because of the program's poorly organized documentation. I recommend that you ask an experienced technical person for help if you are at all uncertain. Start with the Infosphere and Blyth technical support staffs.

You must set up one hard disk on the network as a *net server*. This server is the hardware headquarters for controlling access to the network's shared disk storage. *MacServe* includes an install program that makes this step straightforward. Using a program

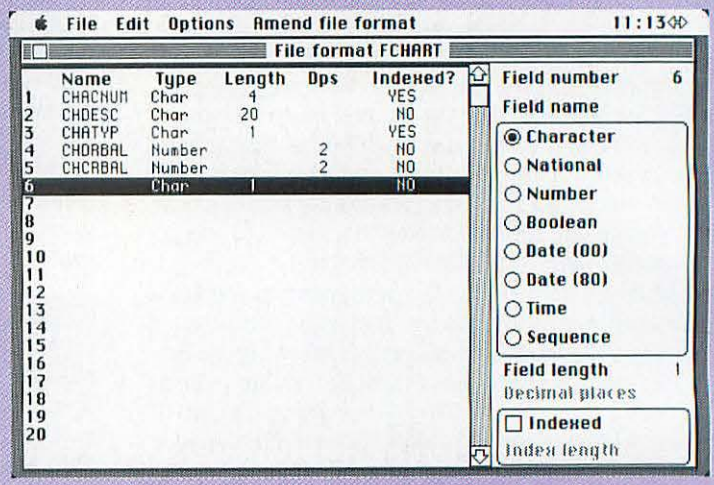


Figure 1
The account file format includes the following fields: account number (CHACNUM), account description (CHDESC), account type (CHATYP), current debit balance (CHDRBAL), and current credit balance (CHCRBAL). The transaction file (not shown) includes account number (GJACNUM), transaction date (GJDATE), transaction description (GJDESC), debit amount (GJDRAMT), and credit amount (GJCRAMT).

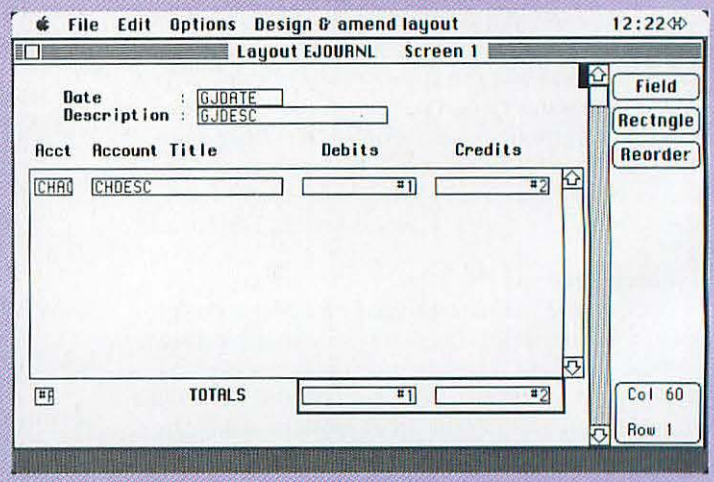


Figure 2
The entry format for the transaction file shows various transaction field names, and two temporary variables labeled #1 and #2. The smaller scrollable window that dominates the center of the screen is called an array.

called the *network manager*, you then create one or more *volumes*. Volumes are divisions of a disk drive. They facilitate shared use of a disk's storage space on a network. Each volume has various changeable attributes. For instance, some volumes may be private, others shared.

The *MacServe* documentation makes volume setup more complicated than it needs to be. For clarification, the procedure works basically as follows:

- Create an "automatic" volume (an unshareable, or private, volume that is automatically activated when you boot the net server).

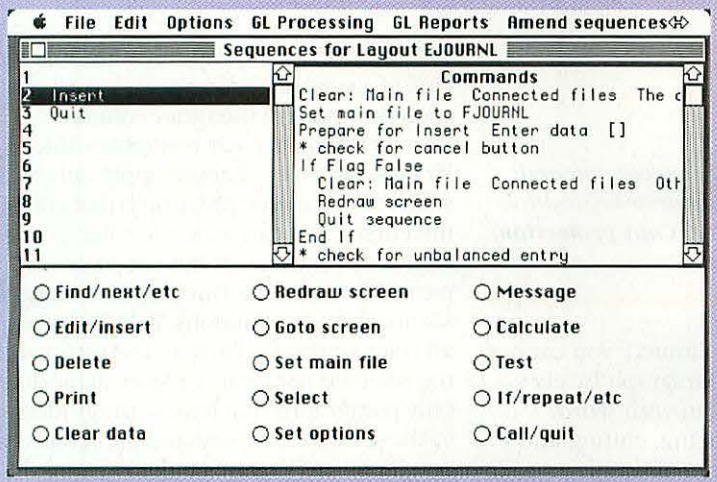


Figure 3

Omnis 3 Plus *makes it easy to define sequences. You click on the sequence title line (on the left) and enter an appropriate title. You then click on specific commands, shown at the bottom of the window, and they're automatically inserted on the right, one line at a time.*

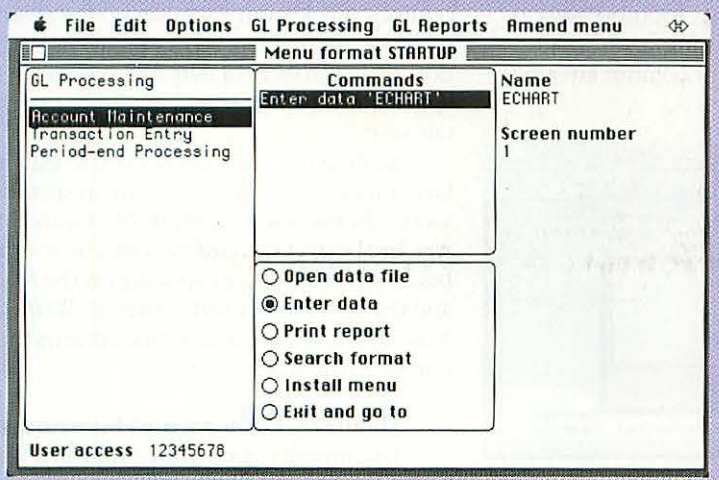


Figure 4

You create pull-down menus and a dialog box that appears when you select Menus from the Options menu. The GL Processing menu is the start-up menu, which means it is automatically displayed when you start an Omnis *template.*

- Restart the system with any HD20 start-up disk. *MacServe* mounts (activates) the automatic volume and creates a desktop file for it. The desktop file must reside on each volume of the network.
- Using the network manager, reclassify your *Omnis* volume as "private."
- Copy all the *Omnis* program files and your application and data into the volume.
- Reclassify the volume again as "network" (shared), so that everyone on the network can access it. Network volumes are marked as locked, but you can still run *Omnis* and your template.
- Finally, you have to create a system disk, with System and Finder files and the *MacServe* drivers, for every other Mac on the network (the network users). This task is also simplified by the *MacServe* install program. When you start up each system, *MacServe* loads automatically. You use a special desk accessory to access the *Omnis* hard disk volume on the net server.

Running Your Application

Once the network is set up, which should take a few hours, your application is ready to run. Network users mount the *Omnis* volume, start up the template, and get to work. *Omnis* takes care of any problems that may arise from more than one person simultaneously accessing the same database.

Network setup and administration can be tricky. Blyth suggests you take the following precautions. Have everyone use the same version of the System and the Finder (3.2 and 5.3 are recommended). Make sure that there is only one copy of *Omnis 3 Plus* on the network and that it is a multiuser version. Keep good backups in case of a network failure. I also suggest that you get a set of Blyth's *Omnis* technical notes.

Network Performance

There's no doubt about it—AppleTalk is not a high-performance network. What do you expect for $50 per user? With three users, all performing network-intensive general ledger activities, there were noticeable processing delays, but they weren't unbearable. While the odds of three people doing the same thing at exactly the same time are low in a real business situation, performance would be improved with a SCSI hard disk. A variety of tests revealed no apparent problems with either *MacServe* or *Omnis*.

Overall, I'm impressed with the combination of *Omnis 3 Plus* and *MacServe*. For all its power *Omnis* is easy to learn and creates multiuser templates as easily as single-user ones. *MacServe* could be easier to se up, but on the whole the product is good. Frankly, I can't imagine an IBM PC-based multiuser solution being nearly as simple. □

See *Where to Buy* for product details.

Reviews

The New Write

WriteNow for Macintosh *1.0*

Word processor. ***Pros:*** *Multiple columns, spelling checker, auto-numbered footnotes, fast and efficient, easy to use.* ***Cons:*** *Lacks glossary, file conversion within the program, cursor-key control; needs more flexible multicolumn formatting.* ***List price:*** *$175.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

T/Maker's *WriteNow for Macintosh* is a polished word processor that retains the elegance of *MacWrite* but adds features like multiple windows, footnotes, multiple columns, and a spelling checker (see "Spell Checking"). Although it lacks capabilities such as cursor-key control, mail merge, and style sheets, *WriteNow* provides most of what you need for writing everything from memos to dissertations. (T/Maker intends to supply cursor-key control when Apple standardizes the cursor-movement commands.)

The program lets you open as many documents as memory permits. Although you can shuffle windows, there's no menu to help select and keep track of open documents. *WriteNow* supports the zoom box of the 128K ROM. The program's text selection shortcuts are limited; you cannot select a single line or paragraph by clicking the mouse as you can with *Word*.

Operations like saving, cutting and pasting, and scrolling are almost instantaneous. The program has a comprehensive Undo command as well as numerous keyboard shortcuts. In addition, you can save disk space by using the Save as Compact option.

Formatting

WriteNow's flexible formatting options allow you to specify one to four columns—each with its own footnote region (see "WriteNow Formatting"). Although you cannot mix different column layouts within a document, you can adjust the margins of a column as long as it doesn't exceed the width of the other columns.

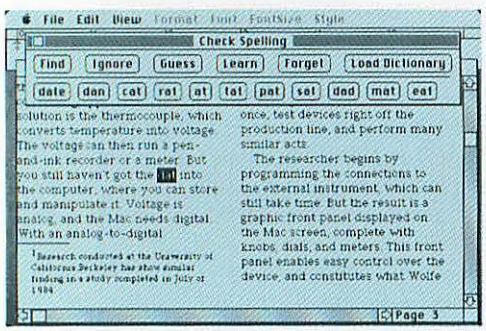
WriteNow's ruler resembles *MacWrite*'s, but ruler changes apply only to the selected text or the paragraph that contains the cursor. You can scale the ruler in inches or centimeters but not points or picas. The ruler has three options: relative, identical, and continuous. Relative adjusts all ruler settings relative to the settings of the selected paragraph; identical modifies only paragraphs that have settings identical to those of the first selected paragraph; and continuous lets you set ruler margins, indentation, or tabs at any place on the ruler rather than at fixed intervals (1/16 inch). When you move ruler markers, the program provides audible feedback in the form of a clicking sound.

Menu options are available for moving paragraph indents and left margin markers to the next tab stop to the left or right of the current location. This lets you format outlines quickly once you set up the ruler with the appropriate tab stops. *WriteNow* doesn't have decimal tabs, but you can specify any character as a leader between tab stops.

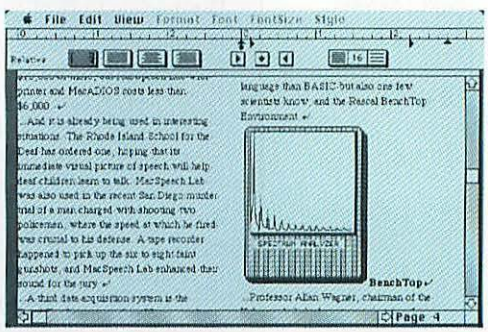
Scaling the ruler allows you to edit in larger fonts on screen and print in smaller fonts. On Macs with 128K ROM, optimizing spacing between characters can be useful because the character spacing on the Mac and the LaserWriter differ slightly. *WriteNow* also has a command that returns the cursor to the insertion point.

Headers, Footers, and Footnotes

Documents open with a four-line blank header and footer, which can be placed anywhere in a document. When you have multiple headers or footers, the region size defaults to the tallest header or footer region for the entire document.

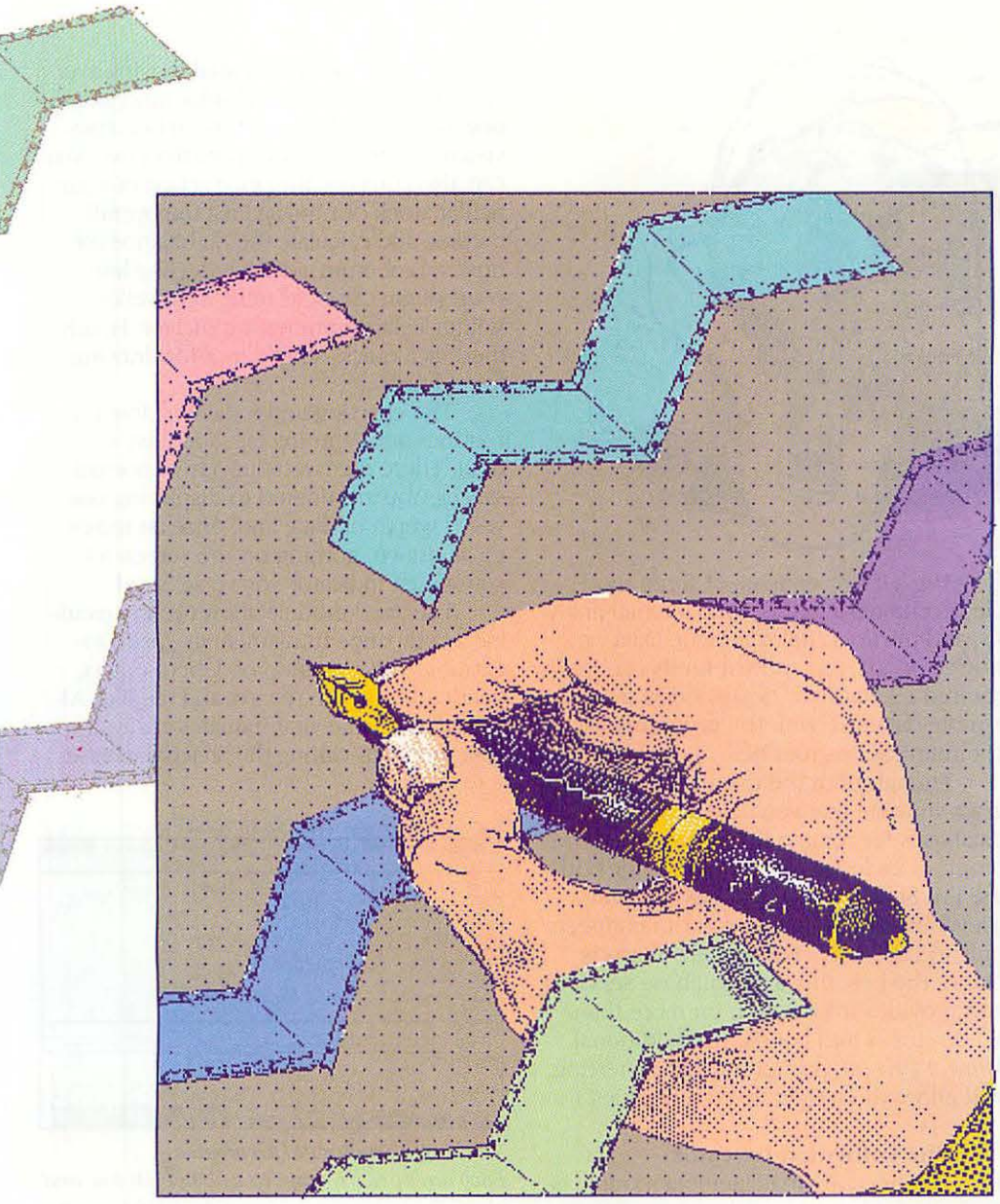


Spell Checking
A user-editable, 50,000-word spelling checker takes up only a small portion of the screen and displays a series of possible spellings.



WriteNow Formatting
You can format text and graphics in up to four columns, set line spacing from 1 to 99 points, and copy and paste ruler formats.

ILLUSTRATIONS BY MARK ULRICH



Headers and footers can contain page numbers, the date, the time, and even graphics, and you can use any ruler setting and any combination of fonts and styles. For two-sided copying, you can create footers that alternate between even- and odd-numbered pages.

You create auto- or manual-numbered footnotes in the same way as headers and footers, inserting footnotes of any length that consist of both text and graphics and have their own ruler settings, fonts, and type styles. The program keeps footnotes on the same page as notations.

Type Controls

WriteNow's type control options include line spacing of up to 99 points, font sizes from 4- to 127-point, condense and extend options, hyphenation, variable superscript and subscript positioning, and global font and type style changes.

When you insert a soft hyphen, the hyphen marker appears only when the hyphenated word splits across two lines of text. You can also insert nonbreaking spaces and line breaks. Superscripts and subscripts can be shifted in one-point increments from the baseline.

Other Features

WriteNow allows you to embed graphics within a paragraph or format the image as a separate paragraph. Although you can scale graphics to any proportion, a graphic can only be as wide as the column it's in. The program automatically keeps graphics taller than the page-wrap factor to avoid splitting an image between two pages. However, you can format a paragraph containing a graphic to cross a page boundary.

Utilities

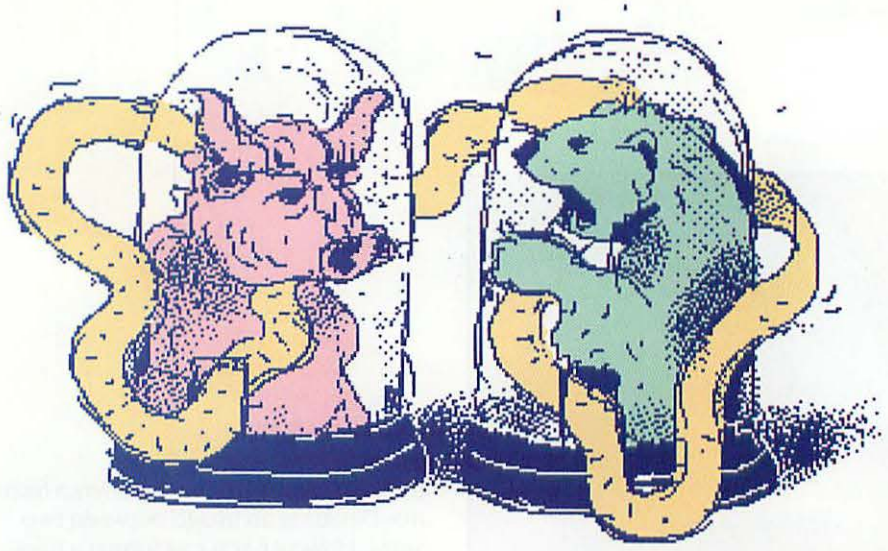
Show Space displays nonprinting characters (for example, spaces, returns, and tabs), page breaks, and the boundaries of headers and footers. You can choose between optimizing fonts for the printer (so that correct line lengths are shown) or for the Mac screen on a Mac Plus or 512K Enhanced.

Medium-quality, tall-adjusted ImageWriter printing is possible while you continue working with the Mac, and *WriteNow* also lets you set up any document as a start-up document. *WriteNow*'s 50,000-word spelling checker is not as fancy or complete as *MacLightning*, for example, but it is fast and accurate.

WriteNow doesn't let you save documents as text or import *MacWrite* or *Word* documents from within the program. Instead, the program comes with a Translator utility that performs the essential conversions. In addition, the Translator offers an interchange format that gives developers a common format for importing and exporting files to *WriteNow*.

The Final Word

Although *WriteNow*'s range of features is more than adequate, some sophisticated options are missing. Control of cursor keys on the Mac Plus keyboard, a glossary, more text-selection shortcuts, and a file conversion utility accessible from within the program top the list. Some writers may prefer the precision control offered by programs like *Microsoft Word* that allow you to enter type and page-setup specifications numerically.



The program's greatest asset is its feel and ease of use. The program's features—including editing, formatting, spell checking, and footnoting—are fast and efficient. You're not faced with numerous dialog boxes to fill in or unintuitive procedures. And the documentation is well written and indexed. Overall, *WriteNow* does what good software is supposed to do—makes complex tasks seem effortless.—*Dan Farber*

See *Where to Buy* for product details.

Making Money With Your Mac

***Market Pro** 1.0*

Financial market analysis. ***Pros:*** *Fast, has no competition on the Mac.* ***Cons:*** *Expensive, some IBM PC programs better.* ***List price:*** *$295.* ***Requires:*** *512K.* ***Copy protection:*** *None.*



It is the hope of gaining a slight edge on the great mass of investors that draws one to a stock market program. Until now, IBM PC owners have largely been the only ones to enjoy the benefits of investment programs. Actually, everyone *except* Macintosh owners has had access to computerized financial market analysis programs for several years now. *Market Pro* is the first such program for the Mac.

Market Pro consists of three modules: technical analysis, fundamental analysis, and portfolio management. Data on stocks, bonds, and mutual funds can be entered manually or downloaded from a remote database with the program's own communications routines.

Though both the manual and the program indicate that you have a choice of databases for remote linkage and that the program includes setup routines for both the I. P. Sharp and Dow Jones News/Retrieval databases, in fact you can connect only to I. P. Sharp. Fortunately, Sharp is one of the best financial database services and provides information on more than 11,000 stocks and bonds. (An additional *Market Pro* program, now in beta testing, will allow you to handle commodities.)

The Informed Investor

The portfolio management module is basically for keeping track of transactions, and its line-and-column entry format should prove adequate for most people.

Technical analysis is the heart of the *Market Pro* program. With information either entered manually or downloaded via a modem from the Sharp database, the program generates a standard bar chart showing the high, low, and closing prices (see "Viewing a Stock's Performance"). The upper portion of the screen shows the price fluctuation, and the lower portion displays a bar chart indicating sales volume. The program handles up to one year's worth of daily trading in any stock, market index, or mutual fund.

A pull-down menu provides eight different technical tools commonly used to analyze a stock's performance, including a choice of moving averages, calculated either as simple or exponential moving averages. Although you can display more than one average at the same time, it becomes visually confusing with more than two. You can also compare the price action of a particular stock or fund against the overall market, and calculate the on-balance volume, momentum, advance/decline line, overbought-oversold ratio, and Welles Wilder Relative Strength Indicator. Finally, there is a quick, simple tool for drawing trend lines.

The charting and indicator drawing routines are lightning-fast and easy to read. There are two relatively minor nuisances: You are limited to displaying one year's worth of data; and, once an indicator is drawn, nothing on the screen tells you which indicator you've selected.

The third module allows you to examine a company's fundamentals—price-to-earnings ratio, relation of debt to equity, dividends, growth record, and the like. Although the same vital statistics are available simply by calling the Sharp database using any communications program, *Market Pro* lets you set criteria to focus your search for companies that meet your particular investment requirements.



Viewing a Stock's Performance
Each day's price is graphed with its high, low, and close. The rising curved line is the 30-day moving average of the closing price. The dark lines at the bottom of the chart represent daily volume. The gray wavy line is a Wilder Relative Strength Indicator, plotted on a 14-day moving average.

Communicating with *Market Pro* is perhaps a bit too easy. If you double-click on the telephone icon the program will immediately dial I. P. Sharp and try to download data—even if you have no stocks selected. The program will hang for a while and then eventually tell you it cannot do what you already knew it could not do.

No computer user who is serious about investing in the stock market should be without a stock market program. *Market Pro* does the job better than most such programs available for the IBM PC, though it's not up to the best of them.–*Bob Schwabach*

See *Where to Buy* for product details.

3-D Dreams

Phoenix 3D Level One *1.0*

3-D modeling program. ***Pros:*** *Offers a variety of rendering styles; individual points can be manipulated; reasonably priced.* ***Cons:*** *Can't see four views simultaneously; manual could use a more detailed tutorial.* ***List price:*** *$39.95.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

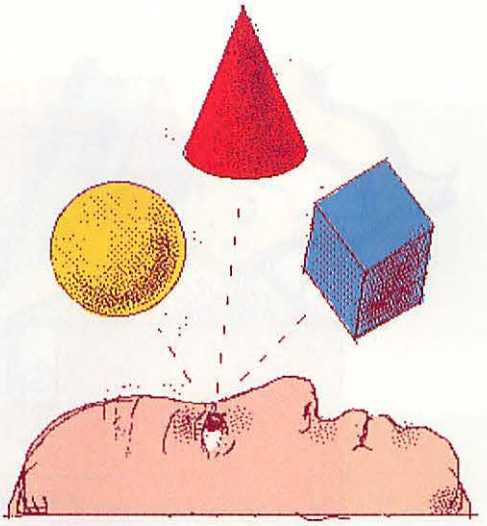
Some of the many approaches to three-dimensional modeling are geared for engineers, offering measurement capabilities, text, and plotter output; others are more appropriate for graphic artists, providing adjustable light sources and multiple shading methods (see "3-D In Depth," *Macworld,* June 1986). The latest entry into the 3-D arena, *Phoenix 3D Level One* combines many of the capabilities of the existing programs into a versatile modeling environment.

Creation

Phoenix 3D provides one tool palette for creating shapes and another for manipulating and moving them in 3-D space. The Creation/Modeling tool palette has six polygon tools ranging from a triangle to an octagon and offers four basic 3-D shapes: cylinder, cone, sphere, and torus. A dialog box allows you to modify the shapes.

Two of the program's most useful tools are the Arbitrary Polygon, which lets you draw a freehand polygon with up to 22 sides, and the Arbitrary Cylinder, which lets you draw an outline that the program converts into a 3-D object by rotating it around a central axis (see "Shaping Up"). You can also extrude a surface backward instead of revolving it, allowing you to create bent surfaces such as a waving flag.

The Creation/Modeling palette contains a Text tool for typing up to 20 labels in a variety of fonts and styles, and a Selection tool for selecting and manipulating an



entire object or a section of an object. The Selection tool provides access to one of *Phoenix 3D*'s most powerful features, the ability to manipulate sections of a polygon. On a multifaceted sphere, for example, you can select a single point or a small area and drag the selected part outward to modify the model you're designing.

Transformation

The Transformation tool palette lets you move objects in three dimensions. You can rotate an object left, right, forward, or backward; spin it clockwise or counterclockwise; shrink or enlarge it along any axis; or move it in any direction. When you move an object, the number of degrees of movement is displayed.

You'll want to experiment with different lighting, point-of-view, and rendering options. In addition to moving objects, the Transformation tools can move your vantage point, as well as two light sources.

Render Unto 3-D

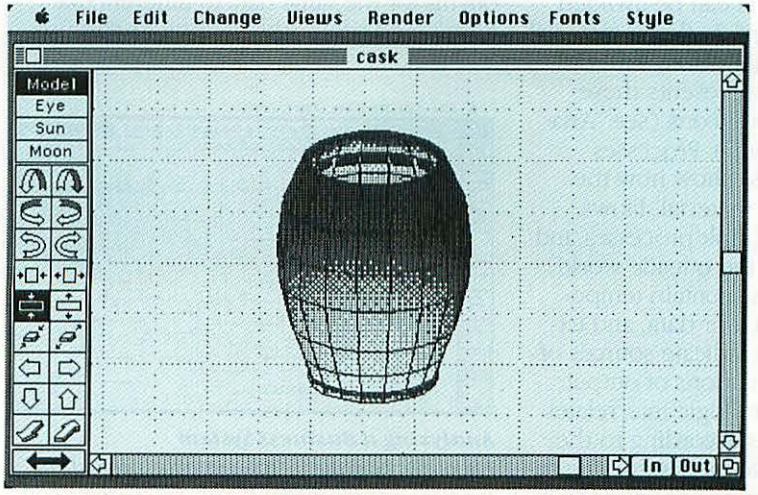
Drawings can be rendered in any one of a number of styles: wireframe, hidden line, shaded, and variations on these options. Such variations range from a simple wireframe outline to a smooth-shaded object with unframed faces. A unique Filter Image option adds random black and white pixels to a drawing to soften the image.

Complex shaded images can take several minutes to render, but the new version should speed this up by about 50 percent. (Version 1.1, which is available to registered owners of version 1.0 for $5, was unavailable at the time of this review.)

Additional Options

Other *Phoenix 3D* features of note include an Explode Model command, which separates an object into its individual planes; a grid to help align components of a model; orthographic or perspective projection options; top/bottom, front/back, and left/right views of an object; a Zoom button; and various dialog boxes that allow you to enter an object's origin points, depth, number of facets, and the like. You can save an object as a *Phoenix 3D* model or as a *MacPaint* document, or you can transfer it to *MacDraw* via the Clipboard.

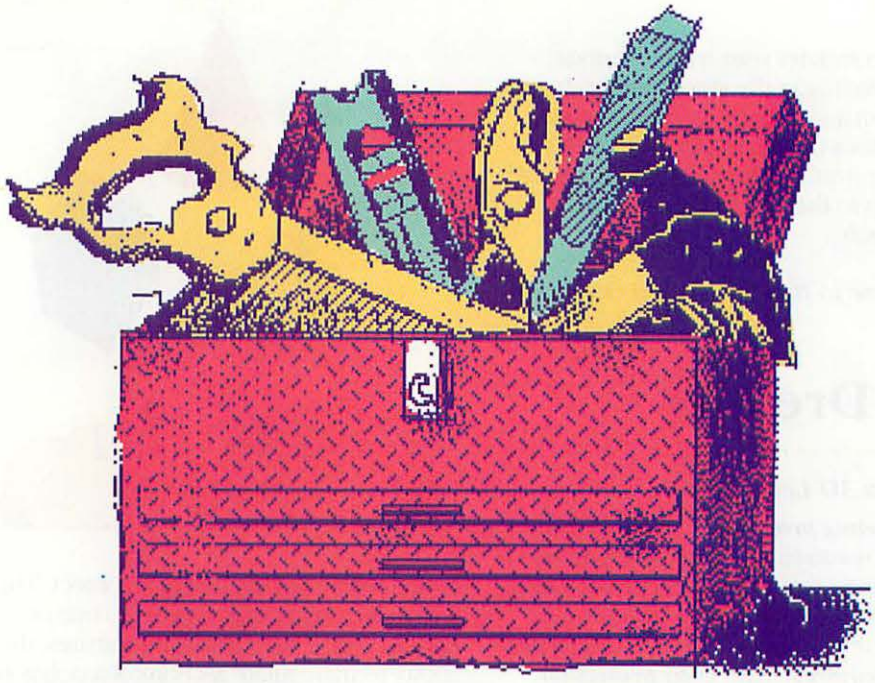
All in all, I'd put this program in the same league as *Easy3D* and *Mac3D. Phoenix 3D*'s user interface is not as intuitive as that of *Easy3D;* I prefer *Easy 3D*'s Lathe tool to *Phoenix 3D*'s Arbitrary Cylinder, for example. Nor is *Phoenix 3D*'s manual as helpful as *Easy3D*'s. And *Phoenix 3D* lacks *Mac3D*'s abilities to display an object's dimensions in inches or centimeters, and to create multipage documents. Nor



Shaping Up
This illustration was created with Phoenix 3D*'s Arbitrary Cylinder tool, which rotates an outline around a central axis. The program provides several shading options and lets you adjust two light sources.*

does it offer *MacSpace*'s simultaneous views (top, front, and so on) or plotter output capabilities. Despite these criticisms, *Phoenix 3D* is a well-conceived program, and I would recommend it as a good low-cost introduction to 3-D graphics.—*Erfert Nielson*

See *Where to Buy* for product details.



A CAD System for Systems

Anatool, Structured Systems Analysis for the Macintosh

Systems-design CAD program. Pros: *Automates modern structured-systems development; enforces conformance to standard practices; rivals the best minicomputer-based programs.* ***Cons:*** *May be too expensive for individual use.* ***List price:*** *$795.* ***Requires:*** *512K with external drive or 512K upgrade with an 800K drive.* ***Copy protection:*** *Hardware key on serial port.*

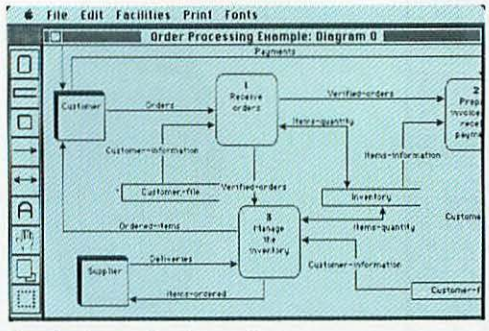
Structured Systems Analysis is a method of dealing with the internal communications problems that often bring complex programming and design efforts to a standstill. A remarkable new program called *Anatool* now makes the power of this method available to Mac users. Developed in France by Arfang, this program provides minicomputer-type systems tools for serious software developers, systems engineers, and consultants.

Most systems snarls can be avoided by carefully specifying data flows, material flows, and processes right from the start of a project. *Anatool* represents these structural elements with icons (see "Analyzing a Business System"). Processes (round-cornered boxes) show how the system acts on data or material. Flows, represented by arrows, link processes and connect the system to the outside world. Stores (open flat boxes) contain temporary deposits of material or data, and externals (square boxes) indicate sources of system input and destinations of output.

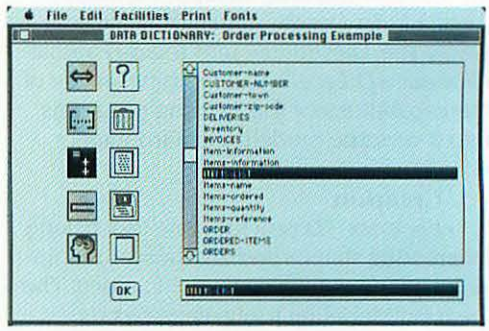
Anatool's program logic interrelates the structural elements according to the rules of structured systems design. The resulting data flow diagrams are linked in a hierarchy, with diagrams for simple processes joined together at higher levels to form an overall description of a complete system. Alternatively, the system may be developed in true "top down" fashion, with main processes defined in terms of successively simpler processes. Even for less complex systems, the automated logic checking in *Anatool* is tremendously helpful. The program reminds you if objects are improperly defined or connected so that your final system specification has no gaps or omissions.

Spelling It Out

Specifications require the definition of system elements. *Anatool*'s Data Dictionary (see "A System Dictionary") lets you record basic data and terms that require no definition; aliases, which are synonyms for the same data in different diagrams; and composite definitions that use structures composed of basic data. *Anatool* checks the Data Dictionary and flags any potential problems, such as missing definitions or conflicting aliases. Finally, the program can automatically create a standard specification, which is the translation of the data flow diagrams into text.



Analyzing a Business System
Although the drawing tools enable you to draw the elements, the internal logic for checking connection of elements functions more like a programming language.



A System Dictionary
Anatool *records and cross-checks data definitions in the system specification.*

Although the program is expensive, *Anatool* and a Mac Plus with a hard disk still cost less together than most equivalent IBM PC programs cost alone, not to mention the cost of VAX-level structured systems programs. *Anatool* is fast and easy to use and is a thorough implementation of structured systems methodology.—*Charles Seiter*

See *Where to Buy* for product details.

Quality Accounting Software

***AMS General Ledger** 2.07*

General ledger accounting. ***Pros:*** *Simple and straightforward; good features.* ***Cons:*** *None.* ***List price:*** *Version 2.08 $195.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

***CheckMark Payroll** 2.02*

Payroll accounting. ***Pros:*** *Integrated with general ledger; full featured; suitable for most companies.* ***Cons:*** *Design could be cleaner; documentation is weak.* ***List price:*** *$195.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

CheckMark Software markets two accounting products for the Mac—*AMS General Ledger* and *CheckMark Payroll*. Each program can be used by itself, or you can transfer payroll information to the general ledger. There are good reasons for buying both programs.

The General Ledger

AMS General Ledger has an excellent blend of features and a straightforward design. It is one of the easiest Mac general ledgers to learn and use but includes many features (such as clear menu structures and dialog boxes) that competing products don't implement as well. It's also one of the few Mac accounting products that run on a 128K system with dual floppy disk drives.

The ledger has five journals—cash receipts, cash disbursements, sales, purchases, and a general journal—with a similar user interface for each. The program produces the usual reports, including a chart of accounts, trial balance, transaction list, general ledger, balance sheet, and income statement. Most reports have options like account, transaction, or date ranges to increase reporting flexibility. Although the financial statements are preformatted with fixed headings, you can define one extra level of detail for the headings on the balance sheet and the income statement.

Additional features include up to nine departments (with consolidated or individual income statements), monthly or quarterly fiscal periods, support for multiple companies, password protection, budgeting, and recurring transactions. The program allows you to store up to one year's worth of detailed financial transactions. Only one fiscal period can be open at a time, but you can make adjustments to prior periods. Budget and income statement balances can be exported in SYLK format for use in other programs.

There are only three accounting menus: Set-Up, Transactions, and Reports. Transaction entry is straightforward (see "General Journal Data Entry"). Each transaction line is entered in a common editing area that shows an unlimited number of transaction lines. The program makes every attempt to automatically fill in information for you.

The documentation includes a brief tutorial and a good reference section, and minimal on-line help is available in the form of footnotes. Although the program deviates from the Mac interface a bit (in dialog-box and object-selection conventions), the overall package is of top quality.

The Payroll

I wish I could be as enthusiastic about *CheckMark Payroll*. It probably has more features than any other Mac payroll program, but they are crammed into an overly simple design. The result is that data entry and payroll processing are not as clear as they could be. Users may have problems learning the program but, once past the initial hurdles, will probably find the package suitable for their payroll needs.

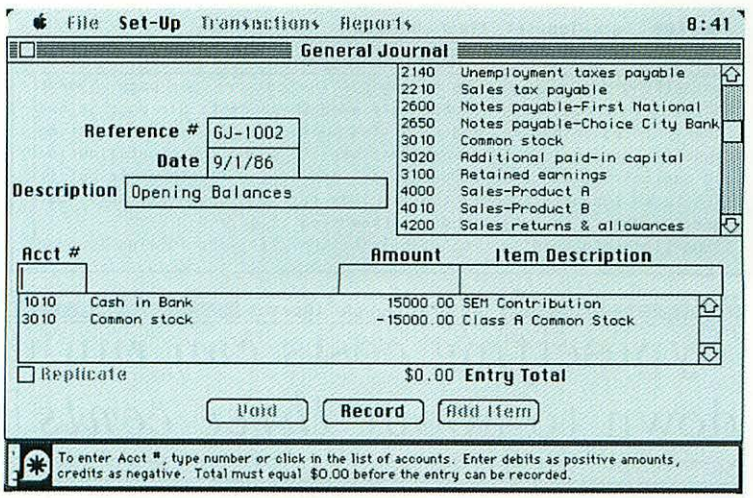
Like the general ledger, the payroll works on a 128K Mac with two floppy disk drives and handles data for up to 200 employees. A variety of pay-period, pay-type, and deduction options is supplied—more than enough for most companies. The program supports all important withholding requirements, including up to six user-defined state tax tables. It also allows up to six user-defined deductions, including fixed and variable amounts, taxable and nontaxable options, and percentage and dollar calculations. It's one of the few payroll progams I've seen that can handle nontaxable 401(K) retirement plans.

The program prints checks, W-2 forms, check and earnings registers, quarterly tax reports, and one-up mailing labels. All payroll data is stored in month-to-date, quarter-to-date, and year-to-date summaries. The earnings and check registers can be exported in SYLK format.

But you have to be careful when using *CheckMark Payroll*. For instance, it doesn't prompt you for variable-amount deductions, which must be entered when you're computing the current pay details for an employee. Paycheck details can be altered or deleted after a check has been printed, with no audit trail, making it easy to lose track of payroll details. If you don't set up your general ledger interface accounts properly or completely, incorrect ledger postings are generated.

The CheckMark documentation includes a tutorial, a company setup chapter, and a reference section. However, considering the number of options and features this program provides, it is woefully short on explanations and examples.

Despite such drawbacks, I'm impressed on the whole with these CheckMark programs. The general ledger is an



General Journal Data Entry
This general journal transaction entry window is typical of all AMS General Ledger's *journal windows. The chart of accounts is readily available in the upper-right-hand corner; clicking an account moves it to the entry line. Help text is displayed at the bottom of the window.*

excellent blend of features, simplicity, and elegance. I'd like to see the payroll program enhanced to include more of those design characteristics. Chances are, however, that *CheckMark Payroll* will do jobs that most other Mac payrolls can't, even though it may take you a while to figure out how.–*Steve Mann*

See *Where to Buy* for product details.

Front-End Typesetting for the Mac

***Textures** 0.8 (prerelease)*

Typesetting program. ***Pros:*** *Powerful document design and formatting system; typesets large and complex documents that combine text and graphics.* ***Cons:*** *Harder to use than page-layout programs; requires learning the TeX language and using embedded codes.* ***List price:*** *$750.* ***Requires:*** *1MB.* ***Copy protection:*** *None.*



PageMaker, MacPublisher, and *ReadySetGo* are fine for designing publication pages on screen. But when it comes to producing large documents like books, page-by-page layout takes too long. These programs also lack the typographical features of a professional typesetting system.

Textures, from Addison-Wesley, turns your Mac into the front end of a typesetting system that drives PostScript-compatible printers and phototypesetters.

Best of Both Worlds–Almost

Textures is a thorough reworking of TeX for the Macintosh. Many regard TeX (pronounced *tech*), a document preparation language developed for mainframes as an excellent tool for typesetting text, for producing complex technical and mathematical documents. TeX offers powerful typesetting features, such as automatic hyphenation, justification, kerning, ligatures, and batch pagination. I found the Mac's interface with multiple windows, pull-down menus, and keyboard entry for text and all formatting codes superior to, and much more enjoyable than, using TeX on a mainframe.

Textures' biggest plus is that it combines TeX's batch pagination system with the WYSIWYG (what-you-see-is-what-you-get) function of page-layout programs. However, *Textures'* WYSIWYG screen is noninteractive, which means you can preview a formatted document but can't move text or graphics around on screen like you can with *PageMaker.* Nevertheless, the preview function shortens the time needed to prepare a final document for typesetting.

Formatting a Document

Using *Textures* is like developing a computer program: you write the source code, execute it, output it, and debug it if necessary. You first type TeX formatting codes into the text of your document; this procedure enables you to control the exact placement, style, and size of all text and graphics. You can also create macro commands to save time.

You import up to 4 megabytes of text from a word processing program or create text with *Textures'* editor. You can integrate graphics information from *MacPaint, MacDraw,* or the Clipboard with your text, or you can type PostScript code directly into your document. A TeX interpreter then reads and formats the document, providing messages or prompts in a dialog box.

WYSIWYG Preview

After formatting a document, you can output it on screen for preview or to an ImageWriter or PostScript-compatible printer or phototypesetter. You can also magnify the preview display several times to look at each page in greater detail (see "Take a Closer Look"), except in the case of PostScript-coded images.

If your formatted document doesn't turn out right, debug it by repeating the editing (or encoding), interpreting, and previewing cycle.

Scaling the Learning Cliff

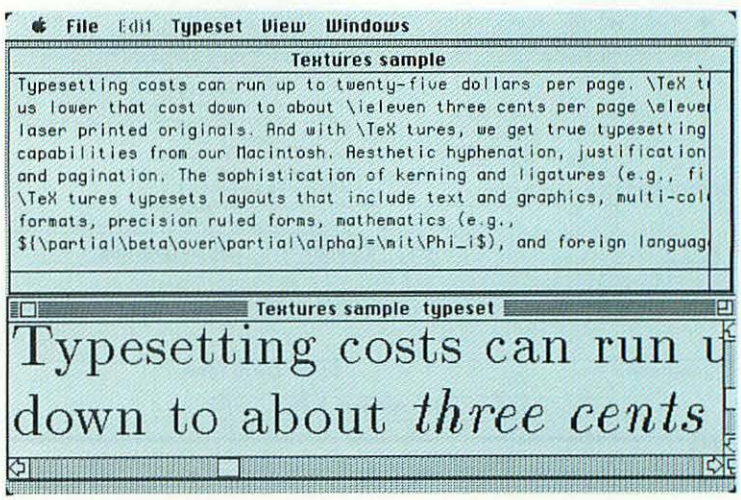
While *Textures* is better suited for producing voluminous documents and precision typesetting than interactive page-layout programs are, it is much more difficult to learn. For example, you have to use embedded codes to move a picture across a page instead of simply dragging it with a mouse.

Although a user manual was not available for this review, Addison-Wesley provided a brief preliminary guide and a copy of *The TeXbook,* Donald Knuth's 482-page manual for learning TeX. What's really needed, though, is a comprehensive collection of TeX document recipes and formats for those who like to learn by imitation.

In addition to the TeX application, the release version of *Textures* is expected to support many PostScript fonts (the prerelease version supports only three: PostScript's Times Roman and Helvetica fonts and TeX's own Computer Modern font).

Anyone willing to take the time to study the TeX language will undoubtedly benefit from *Textures'* ability to control the design and formatting of any document, from prose to poetry, and produce high-quality typesetting.–*Charles Bigelow*

See *Where to Buy* for product details.



Take a Closer Look
The preview window on the bottom of this screen dump represents a 417 percent magnification of a typeset page. The source document appears above the preview window.



Armchair Conquistador

Strategic Conquest II

Strategy/war game. ***Pros:*** *Intense play; two players on one or two computers.* ***Cons:*** *Long playing time.* ***List price:*** *$59.95.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk required for duration of game.*

For 15 days you've maneuvered your invasion force, consisting of five full transports of infantry, two aircraft carriers carrying fighter planes, and a battleship escort, into position for the assault. Your battleship pounds the city you've chosen to invade, sinking a destroyer in port. Your opponent picks up the red phone: "You'll pay for that, scoundrel!" You smugly reply, "Not too darn likely! I've come to collect!" You hang up the phone as four strategic bombers take off to cripple your enemy's production.

PBI Software has just released *Strategic Conquest II,* the multiplayer edition of the strategy war game *Strategic Conquest.* While the single-user version required that you play against the computer, *Strategic Conquest II* allows you to play against the computer or a human opponent, either on the same computer or via the AppleTalk network. The game offers digitized sounds and enhanced graphics and allows the players to type messages to one another.

A Different World

At the outset of the game, the program generates a random world map, which is initially blacked out. As you explore, World Map lets you view the entire known world, and City List names your cities and tells you what they are producing.

Rapid exploration and expansion is the key to success. Armies are the only land-based force and the only means of capturing a city. Fighter jets and bombers may move over land and water but may only refuel in friendly cities. Ships and subs, naturally, move on water, and you must produce them in a port city. Early in the game, mobility and economy are paramount. Initially, each player needs armies to take over cities and transports to move the armies across water. As the game develops, heavy pieces, such as battleships, become necessary.

At a certain point, conflict becomes unavoidable. Pieces may engage one another when they occupy an adjacent square. But offense is not necessarily the best defense—attacking pieces can be repelled or destroyed. Pieces with more than one unit of strength may also be damaged.

The Longest Day

A two-player game can easily run 16 hours, for as the game progresses, the size of your forces increases. Turns are measured in days, and each piece must be moved once a day, although the game does permit automatic moves.

Despite the long playing hours, *Strategic Conquest II* has a freshness every time you sit down to play that is not found in other games. Unlike games that use the same strategy repeatedly, *Strategic Conquest II* provides a different challenge in each skirmish.—*Otto Waldorf*

See *Where to Buy* for product details.

References: Supplied upon Request

Professional Bibliographic System *2.56*
Biblio-Link Dialog *2.1*

Bibliography creation system. ***Pros:*** *Versatile formatting and searching; file conversion from on-line databases.* ***Cons:*** *Limited print enhancements; a bit costly.* ***List price:*** *Professional Bibliographic System $295 (demo version $75); Biblio-Link Dialog, Biblio-Link BRS, and Biblio-Link MedLARS modules $195 each.* ***Requires:*** *128K.* ***Copy protection:*** *Two recoverable installations.*

If you compile bibliographies or catalogs, do research, or write for a living, two appealing products from Personal Bibliographic Software are worth investigating. With *Professional Bibliographic System (PBS)* you can create bibliographies, and with the desk acces-

sory *Biblio-Link* you can convert downloaded files from on-line services, such as Dialog and BRS, into *PBS* structure. Together, these programs take much of the drudgery out of assembling references.

PBS is particularly versatile, containing 20 different *workforms* that include standard bibliographic formats for books, periodicals, dissertations, and a good deal more. You can change workforms as often as necessary and add notes to every citation. Once you've completed your citations, you select what the bibliography will include, specifying the indentation, page numbering, and headings. *PBS* punctuates both printed and disk file versions through separate *punctuation files,* in bibliographic formats such as general scientific style or those recommended by the American National Standards Institute (ANSI), the Modern Language Association, and the American Psychological Association. And you can customize your own format with your own punctuation file.

PBS is generally easy to use, although menu placement of some operations (for example, creating a new text file and formatting data) is not always logical. On the other hand, data entry is straightforward, whether you're tabbing from field to field, moving among citations, or clicking buttons to store your data. The program punctuates as part of the output, thus saving time during data entry.

From the current data file you can print a bibliography that is a subset of the citations or print the file in its entirety. *PBS*'s powerful searching capabilities allow you to pinpoint the specifics that you want and to compile a bibliography with just those criteria. You can further define the format before printing, by designating whether such things as the note, the abstract, or index terms should be included.

Supplying the Missing Link

If you use commercial on-line databases, the speedy *PBS-Biblio-Link* connection lets you easily convert downloaded files from Dialog, BRS, and MedLARS (a medical database) into *PBS* citation format. However, you must use your own communications program, and you must record the entire session, since *Biblio-Link* needs specific commands from the database service to perform its conversion.

The version of *PBS* I used had some shortcomings, such as its inability to use any fonts except Chicago and Geneva. A new release (version 2.6) reportedly allows you to use any font in your system. A related shortcoming is *PBS*'s limited editing capability; for print enhancements other than boldface, italics, or underlining, you must save your bibliography as a text file and edit and print it with a word processor.

Good References

Remember that *PBS* is specialized and its universe is limited. Despite its searching and formatting versatility, it's not designed to be a general database manager. Its sophistication requires time spent studying the manual and tutorials, even if you're familiar with bibliographic terms and formats. But if you have a drawer full of index cards or disks full of downloaded research, that time and effort will be rewarded. And though the price is a bit steep, scholars, librarians, and bibliophiles will find *Professional Bibliographic System* to be an excellent tool for research.—*Jeremy Joan Hewes*

See *Where to Buy* for product details.



Process Monitoring

Parameter Manager *1.09*

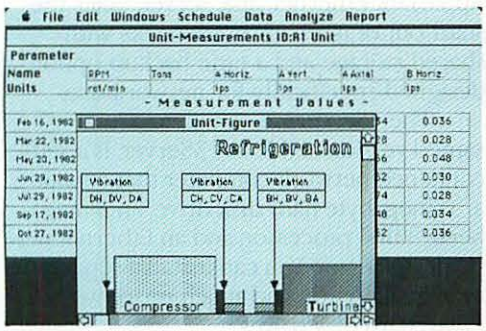
A measurement and analysis system for time- or sample-dependent data. ***Pros:*** *Performs functions provided by no other Macintosh program. Provides the user with an integrated statistical, database, and graphics tool for technical data analysis.* ***Cons:*** *Cannot directly import spreadsheet data.* ***List price:*** *$495.* Parameter Manager Plus *$995.* ***Requires:*** *512K, external drive.* ***Copy protection:*** *None.*

Parameter Manager was originally intended as a tool for industrial process monitoring. Structural Measurements Systems, however, is now marketing it as a "technical data manager."

Basically a specialized spreadsheet with the added dimension of time, *Parameter Manager* is an integrated software tool that could be useful to anyone

who needs to collect, store, and analyze large amounts of time- or sample-based data.

Parameter Manager can track 64 variables for a virtually unlimited number of items, such as machines, experiments, or processes. The program maintains data in a basic spreadsheet format (see "Keeping Cool"). You can link additional information to this spreadsheet in the form of item parameters, such as the maximum allowed change in a variable; Item Notebook documents, which contain textual information about an item; expanded item descriptions; and imported *MacPaint* or *MacDraw* reference figures. *Parameter Manager* lets you set absolute or rate-of-change limits for each parameter. Whenever a measurement value exceeds the allowed condition limit, the program automatically alerts you.



Keeping Cool

Parameter Manager *at work: The spreadsheet shows records of vibration measurements made on a refrigeration unit. In the inset window, a schematic drawing provides instructions about precisely where measurements are to be taken.*

If you have *Parameter Manager Plus,* you can purchase the Remote Data Entry Option ($695), which lets you enter data from a remote modem, or PDC Interfaces ($995 to $1295), which accept data from portable data collectors.

Scheduling

A schedule is used in any monitoring process to systematize data collection and analysis procedures. *Parameter Manager* excels in the creation of schedules for data collection. A schedule in *Parameter Manager* can be based upon one or more sets of criteria. Measurements can be requested at specific intervals on, before, or after specific dates. Measurements may also be scheduled according to criteria involving existing conditions. In addition to date- or frequency-oriented schedules, schedules can be arranged according to item identification numbers and item locations. Such schedules could form the basis for a route for performing data collection.

Analysis

Besides providing a good overall picture, *Parameter Manager*'s analytical capabilities enable you to graph trends, forecast future values, and compare different parameters or items. In addition to graphically displaying trends, the program produces simple descriptive statistics and correlation matrix output. However, *Parameter Manager* is not a substitute for a good statistical analysis package such as *StatView 512+;* its procedures in data analysis are geared to analyzing time-, date-, or specimen-dependent data. If you're interested in the technical data analysis for statistical process control (SPC), *Parameter Manager Plus* includes an SPC module for producing x-bar charts, charts of individuals, p charts, c charts, range charts, moving range charts, np charts, and u charts.

Reports

Parameter Manager generates management reports that can be used to document the contents of the database or to produce worksheets for manual data collection. Program options let you easily list such things as items that have exceeded the condition limits or parameters that have been "missed" (items that have undefined values for the previous or current measurement date).

You can search the Item-Notebook for specific item codes with which to generate reports, or produce end-of-period reports –analogous to operating logs showing the unprocessed data–that contain information on all the parameters with defined values (including all the measurements taken over a period of time).

On the whole, *Parameter Manager*'s versatile database and advanced reporting and analytical capabilities make the process of measuring and analyzing time- or sample-dependent data much easier. The program is well designed and implemented. For statistical process control or portable data collection applications, *Parameter Manager* is unique in the world of application software.–*Terry A. Ward*

See *Where to Buy* for product details.

FileMaker's Form Improves

***FileMaker Plus** 1.0*

Database manager. ***Pros:*** *Straightforward form-design tools; eight files can be open simultaneously; reads and writes text, SYLK, and BASIC sequential files; lookup feature saves data entry time; scripts automate repetitive actions.* ***Cons:*** *Limited entry-checking features; accepts text data in number fields; no Windows menu for quick access of an open file's window.* ***List price:*** *$295.* ***Requires:*** *512K.* ***Copy protection:*** *None.*



Finding the right data management program isn't easy. Buy a complex program, and you may feel like you've bought a shotgun to kill flies; buy a simple filer, and you may outgrow it in a week. The latest version of Forethought's *FileMaker Plus* builds on its predecessor's excellent foundation (see *Macware Reviews, Macworld,* December 1985) and is positioned between simple filers like *Microsoft File* and *Record Holder,* and heavyweights like *dBase Mac* and *Omnis 3 Plus.*

The Form's the Thing

FileMaker Plus retains the form-based structure of its forerunner. A set of layout tools and a precise, on-screen measuring system make it easy to design attractive forms containing graphics, lines, boxes, and any Mac font. You can create as many layouts per database as you need. Unlike *FileMaker, FileMaker Plus* also creates preset, unadorned form layouts for data entry and columnar reports; you can use these layouts as they are or as starting points for custom layouts. The newest version not only displays records in a columnar, spreadsheetlike format but lets you edit or add to the records in this format. *FileMaker Plus* offers the text, number, date, and calculated fields of its predecessor but also adds graphics fields.

One asset of *FileMaker Plus* can be a liability when it comes to form design. The program lacks a Save command; it automatically saves your data and forms to disk after 30 seconds of inactivity, which means you can't revert to a form's previous design after changing it. The remedy is simple: make a copy of the layout before altering it.

Unlike most file managers, *FileMaker Plus* indexes a data file on every field. This approach lets you locate data quickly, regardless of which field you're searching. By maintaining the indexes in memory (saving to disk only when available memory fills or the program is inactive), *FileMaker Plus* offers the fast sorts and searches that multiple indexes provide, without sacrificing data entry speed.

FileMaker Plus lets you open up to eight files at once—a big improvement over *FileMaker*'s one-file limit—but it lacks a Windows menu for quickly bringing a particular window to the top. You can avoid window shuffling by using Marsh Gosnell's $5 *Windows* desk accessory (available through user groups and on CompuServe).

Another significant new feature is the ability to automate frequently performed actions with scripts. A *FileMaker Plus* script can, for example, display a specific form, sort a database, or locate certain records and then print them.

You Can Look It Up

FileMaker Plus's multifile capability combines with its new lookup feature to provide capabilities similar to those of relational databases like *Reflex for the Mac* (formerly *Interlace*) and *dBase Mac*. For any field, you can tell *FileMaker Plus* to look up a value in a separate file. In an invoice application, you can type a value in a Part Number field, and *FileMaker Plus* will retrieve the item description and unit price from a separate file (see "Looking Up Data"). At first glance, *FileMaker Plus*'s lookup feature functions like a relational database, but it won't let you mix fields from different files on the same form, and data retrieved from one file is actually entered into the other. So if you update the information in one file, it won't be updated automatically in the other file.

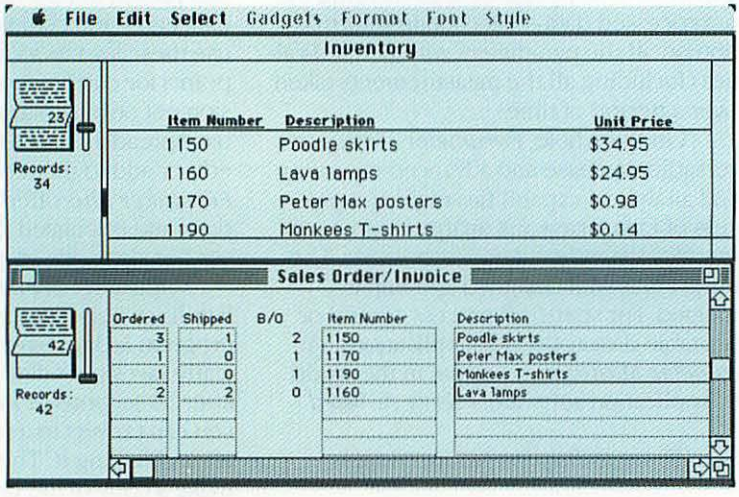
Not for the Error Prone

Despite the many pluses in *FileMaker Plus,* one failing dampened my enthusiasm: the lack of entry checking. You can specify that the program check an entry to make sure it does or does not exist elsewhere in a file, but that's all. You can't specify range checking, pattern matching, or field comparisons.

A more significant flaw exists in the original *FileMaker* as well. *FileMaker Plus* stores exactly what you type. Forethought's rationale behind this quirk is that some applications benefit from text in number fields. Perhaps so, but many applications require accurate numeric data for calculations. The best approach would be to make text entry in number fields an option that you could turn on or off.

Its casual approach to entry checking aside, *FileMaker Plus* is an excellent program. It retains the best traits of its ancestor—simple but effective form-design tools, good performance, data-sharing features, and a superb manual—while adding a lookup feature, scripts, and spreadsheet format display. Although its price has increased along with its skills, *FileMaker Plus* remains a good value. It's the program of choice for anyone who can do without the power (and the setup headaches) of a relational program but who has outgrown a simple filer—and types carefully.—*Jim Heid*

See *Where to Buy* for product details.



Looking Up Data
FileMaker Plus's *lookup feature lets the program automatically enter data from one file into another. Here,* FileMaker Plus *copied the contents of the Inventory file's Description field for each item number. The Inventory file appears here in list form.*

Serving the Masses

3Server3

Network disk server. ***Pros:*** *Reliable, with extremely well-designed tape backup and functional LaserWriter spooler; shared access from IBM or compatible PCs on Ethernet and Macintoshes on AppleTalk.* ***Cons:*** *Can't link volumes from within applications; primitive file transfer between Mac and IBM partitions; PC users can't see Mac files.* ***List price:*** *3Server3 $5995; Tape Backup $1995.* ***Requires:*** *128K, 512K, or Macintosh Plus.*

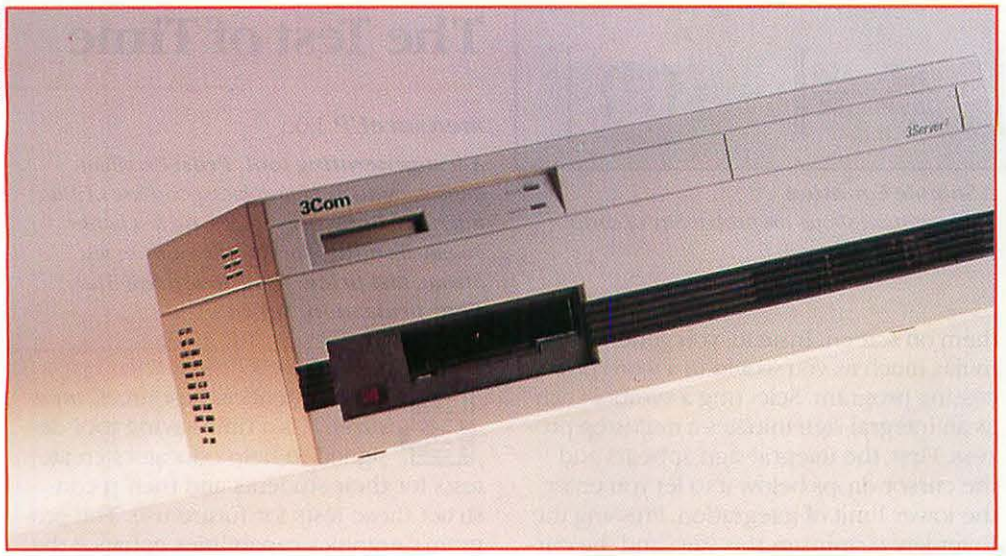
Improperly designed network storage can be the source of interminable delays. The 3Server3, an AppleTalk/Ethernet disk server, takes the snarl out of network bottlenecks with shared storage and a tape backup option designed specifically for network use.

The 3Server3, a completely redesigned version of 3Com's 3Server, is a self-contained network computer that contains a 70-megabyte hard disk drive, an 8-megahertz 80186 processor, and an Ethernet network processor. You can install a separate tape-backup unit and attach up to twelve 70MB hard disk drives.

Although setting up for this review required attaching an IBM or compatible PC to the 3Server3's Ethernet port, 3Com's new *EtherSeries* version 2.6 software lets you set up the 3Server3 from a Mac. Installing the AppleTalk user software is straightforward—it involves no more than copying two applications, Manager and Mac-to-PC, onto a disk for each Mac user. I had no problem running the 3Com software from a floppy disk, Apple's Hard Disk 20, or SuperMac Technology's DataFrame.

Gaining access to the 3Server3 is somewhat like logging on to a multiuser mini or mainframe. Fortunately, you can create a command document that will automatically log in the user, link up to four preselected volumes at a time, and start up an application. Unfortunately, you cannot link volumes from within an application. Once you quit the Manager, the linked volumes appear on the desktop just as if they were floppies.

The volumes I created with System 3.2 and Finder 5.3 were HFS compatible. I had no problem saving to folders from



within applications or from the desktop. Although I was unable to time the 3Server3, I did time the older 3Server and found it could save a 64K *MacWrite* document about 20 percent faster than *MacServe* with an AST-4000. According to 3Com, the 3Server3 is capable of even better performance with a faster AppleTalk network.

As with other disk servers, you allocate space on the server's disk by creating fixed-size volumes. 3Com's Manager application lets you specify the volume size but won't let you resize a volume after you've created it. Instead, you must create a new volume and copy the original volume's contents into it.

When you create a volume, you assign it access rights: a private volume is accessible by only one user at a time; a public volume can be read by multiple users but can be modified by only one; and a shared volume can be modified by many users simultaneously.

A Link to Ethernet

The 3Server3 provides the ability to connect both Ethernet- and AppleTalk-networked computers, but it's not a gateway; though you can access other 3Server3s via Ethernet, you can't communicate with a Mac on a remote AppleTalk. Unlike Kinetic's FastPath, the 3Server3 doesn't let Mac users send AppleTalk messages over Ethernet—3Com uses the XNS protocols in place of AppleTalk. However, AppleTalk users can transfer files to and from PC user volumes with a separate application, Mac/MS-DOS.

Documents transferred by Mac/MS-DOS are transferred without any translation. To share formatted data files, PC and Mac users must run applications that read common file formats, such as *Excel* and Lotus's *1-2-3*.

Although Mac/MS-DOS transfers PC and Mac documents flawlessly, PC users cannot see Mac documents, and Mac users see an MS-DOS-type directory. Furthermore, PC users cannot initiate file transfers.

Spooling Lasers

The 3Server3's ability to spool LaserWriter documents can save time for desktop publishers. Because multiple documents can be queued up on the 3Server3's disk in less time than it takes to print them, users no longer have to wait for printing to finish before resuming work on the Mac.

The 3Server3's spooler prints bit-mapped images (*MacPaint* documents), object-oriented images (*MacDraw* documents), and Aldus's *PageMaker* (version 1.02) documents without a hitch. PC users must run a separate program, Script.exe, to print text files. Only PC programs that can output PostScript files can print directly to the spooler.

I experienced one problem with the spooler. Because the LaserWriter isn't connected to AppleTalk, users cannot receive any error messages it might send. For example, while a file was printing, I was unaware that the LaserWriter had run out of paper.

Automated Protection

With the 3Server3 tape backup, you can copy and restore the entire disk onto/from a 60MB tape cartridge, or you can back up only what's been changed since the last backup. (I was able to back up 20 megabytes in just under 20 minutes.) 3Server3 lets you schedule automatic backups at specific times, but you cannot access the server while the backup is in progress.

The backup software I tested required a PC, or a Mac connected to the serial port, to control the backup. 3Com's *EtherSeries* 2.6 allows you to control the backup operation from a Mac on the network.

Storage to Remember

The 3Server3 is an ideal choice for those who can't afford to lose data. While the 3Server3 lacks a transparent PC-to-Mac interface and carries a rather steep price for a hard disk, it offers LaserWriter spooling and automatic tape backup in addition to the disk server—a combination that neither *MacServe* nor *TOPS* can currently match.

This spring, 3Com expects to offer Mac users the *3Plus* software that runs on PCs. With the arrival of *3Plus,* the 3Server3 will provide true file service, an extensive electronic mail service, and remote network capabilities.—*David Ushijima*

See *Where to Buy* for product details.

Technical Writing Anyone?

MacEqn 1.9

Equation processor desk accessory. Pros: *Works within any application; creates PICT files; prints in high resolution.* ***Cons:*** *Complete editing of equations is not possible.* ***List price:*** *$44.95.* ***Requires:*** *128K.* ***Copy protection:*** *None.*

Until recently, academicians relied on dedicated word processors such as NBI and Wang to document equations, formulas, and mathematical notations. But you had to print the document to proof the equations, since the notations were not displayed on the

$$P_{pair}(E) = \int_0^{E_{max}} \phi_{pair}(E,E')\,dE' = 4\alpha\frac{N}{A}\Sigma(\Sigma+1)\lambda_c^2\left[\frac{7}{9}\ln\frac{2E}{m_e c^2} - \frac{109}{54}\right]\left[1 + 0.12\left\{\frac{\Sigma}{82}\right\}^3\right]^{-1}$$

A Sample Equation
This equation shows the probability of certain atomic interactions.

computer screen. With the *MacEqn* desk accessory, you can write highly complex equations that include integrals, summations, products, multilevel super- and subscripts, and arrays. The program allows partial editing of equations and displays matrices of up to 7 by 7. This $44.95 (as low as $6 if site licensed) desk accessory occupies only 19K in the System file. In future versions the developer plans to decrease the size by about 3K.

Making It Work

The *MacEqn* distribution disk includes a Font/DA Mover and laser fonts. *MacEqn* won't function properly unless you've installed the symbol font from the distribution disk in the System file; to ensure the legibility of your equations on screen, install at least 9-point, 12-point, and 24-point fonts; include 18-point if you use the ImageWriter.

When opened from the Apple menu, *MacEqn* adds a new menu option, Eqn, to the existing menu bar. Under Eqn appear the options Integral, Sum, Product, SuperSub, CntrdSupSub, Fraction, Root, Over, and Refresh (see "Symbol Equivalents"). Also included are the font selections and styles, and each option has its own ⌘-key equivalent. Edit key commands are also supported. You'll need to read the well-written manual to create the equations.

Building the Equation

MacEqn is not a simple draw-type program in which you select symbols and characters from a palette and position them on screen. Instead, you generate formulas much as you would in a word processing program. Selecting a symbol such as an integral sign initiates a multistep process. First, the integral sign appears and the cursor drops below it to let you enter the lower limit of integration. Pressing the Enter key terminates this step, and the cursor moves above the integral sign for the upper limit of integration. The program allows a maximum of 256 characters and 16 nested levels of function in an equation.

The bottom of the screen displays the symbol type being generated, the font size, the style, and the function level. Sizes of symbols and characters adjust to accommodate any expression, including integrals, fractions, matrices, and so forth (see "A Sample Equation").

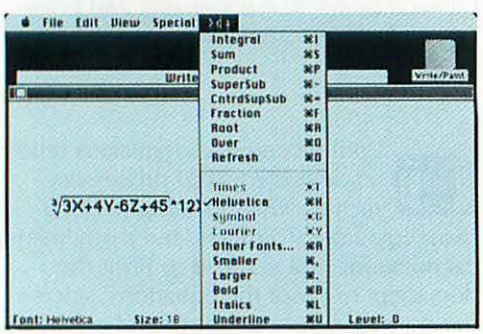
The completed *MacEqn* formula is cut and pasted into the document via the Clipboard. With *Microsoft Word* you can create glossaries of common formulas and insert them into a document later with a single keystroke.

The Finished Equation

MacEqn stores equations in PICT format, which allows additional editing in *MacDraw* and also provides maximum resolution when printed with the LaserWriter. For printing on an ImageWriter, try Helvetica or Geneva.

You can copy a *MacEqn* equation out of a document and paste it back into *MacEqn*. Editing capabilities include insertions, deletions, and repositioning (with the cursor keys on the Macintosh Plus). Not all of the information used to create a *MacEqn* equation stays with the finished equation, so modifications of an existing formula may not be successful. *MacEqn* is a welcome and exciting new tool for the scientific and engineering communities.
—Edwin Haskell and Prasad Kaipa

See *Where to Buy* for product details.



Symbol Equivalents
MacEqn *provides its own menu with keyboard commands and a window in which you can create your equation.*

The Test of Time

measureUP 1.0d

A test-generating tool. Pros: *Excellent implementation of graphics; good use of Mac interface.* ***Cons:*** *Very pricey; no test banks available; no support for divisions in test layout.* ***List price:*** *$349.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk.*

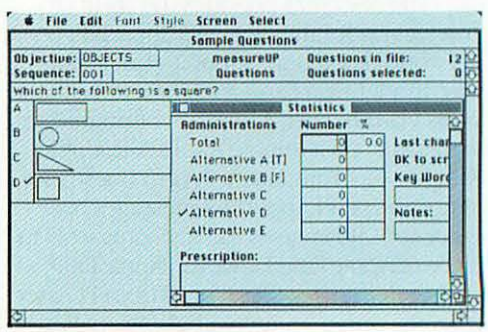


Logic eXtention Resources' *measureUP* is a time-saving tool designed to help educators create tests for their students and then reconstruct those tests for future use. The program's graphics capabilities enhance the testing formats and provide a broader scope for test questions. The program consists of two primary modules: *measureUP* Questions and *measureUP* Design. The program enables you to develop a database of questions (free form, true/false, and multiple choice), from which you choose individual questions to construct a test and then create a test layout with the *measureUP* Design module. You can easily switch between the two.

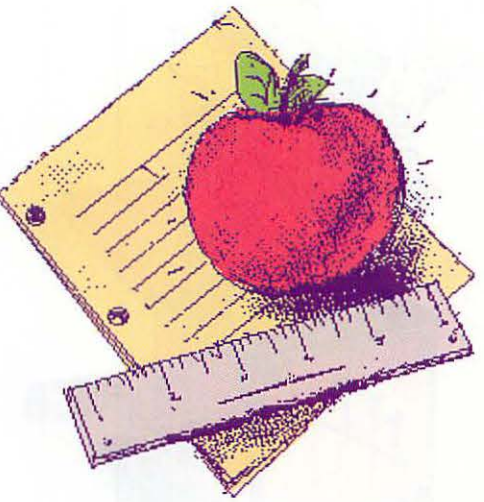
A Flexible Testing Device

A *measureUP* question is composed of information in up to six horizontal boxes and one vertical box (called the answer box). The first horizontal box, in which the question is stated, is called the stem. The other horizontal boxes are the question alternatives (see "Questions and Answers").

Designing a test is very quick and easy. With the Design module, accessed from the File menu, select from the Questions File window and transfer to the Test Design window. Questions can be inserted into the test as you build it.



Questions and Answers
The measureUP *Questions screen includes the question stem, alternatives, and the answer box.*



The program also provides a Statistics window for tracking student responses. You can print up to ten different versions of a test, as well as a scoring key. And *measureUP* can randomly arrange alternatives of test questions.

The program fully supports importing and exporting of information. It exports test questions in *measureUP, MailMerge,* the Clipboard, and text formats, and it imports files such as statistics information in *measureUP* or *MailMerge* formats. You can select individual question components to export to other programs.

An A for Graphics

The feature that most distinguishes *measureUP* from its competitors is its ability to handle graphics very much like a desktop publishing program. You can paste a picture into the question stem or alternatives and drag it anywhere. You can also scale pictures from 1 percent to 300 percent and trim any portion of a picture that is outside the picture box.

Measuring Up

Even though *measureUP* makes question entry easy, it takes dedication to create a substantial database of questions. The product would be more valuable if question databases from educators and publishers were made available, but currently, the company has no plans to provide this service. The testing module also lacks the ability to create different instructions for each section of the test.

Overall, *measureUP*'s many worthwhile features outweigh the problems. The documentation is comprehensive and easy to read, and although there's no index, the table of contents is detailed enough to help you locate the material you need.

measureUP is a time-saver and a significant step forward in educational testing, although at $349, the price of improvement is high. For those not put off by its cost, however, *measureUP* is the best educational testing tool on the market.—*David Kater*

See *Where to Buy* for product details.

Highfalutin Hyphenation

Mac-Hy-phen *1.0*

Hyphenation desk accessory. Pros: *Relatively fast; easy to use; works with* Microsoft Word, PageMaker, *and* MacPublisher I *and* II. ***Cons:*** *Eliminates text and font formatting; noneditable dictionary; limited prefix and suffix hyphenation; incompatible with* MacWrite. ***List price:*** *$125.* ***Requires:*** *512K.* ***Copy protection:*** *None.*



The newest text and page-layout aid from Boston Software Publishers is *Mac-Hy-phen,* a program that adds conditional, or "soft," hyphens to text files. Like many other utilities, it operates as a desk accessory and must be installed in the Apple menu. You open it from within a word processor or page-layout program, then hide or close its window when it's not in use.

Mac-Hy-phen works with text files created by *Microsoft Word,* Aldus's *PageMaker,* and Boston Software's *MacPublisher I* and *MacPublisher II.* If you use *MacWrite* to create your text files, *Mac-Hy-phen* shows the placement of hyphens, but they are not retained when you return to your document, since *MacWrite* cannot recognize them.

Mac-Hy-phen consists of a desk accessory, which occupies about 10K of space, and a 230K dictionary of hyphenated words. With a 512K Mac, the dictionary must be in a second disk drive when you use *Mac-Hy-phen*—a problem you don't encounter with a 512E or a Mac Plus. Unfortunately, you can't edit or customize the dictionary, though the manual promises the "eventual" availability of these options.

Seen and Not Seen

Mac-Hy-phen is easy to use and fairly quick (a 15K document took about 3 minutes to hyphenate), considering that it compares your text with its 230K dictionary and inserts a special character at each hyphenation point. To use it with any of the four programs, you first select and copy to the Clipboard the text to be hyphenated. You then select *Mac-Hy-phen* from the Apple menu, open the dictionary, and paste the text into *Mac-Hy-phen*'s window. When you click on the Hyphenate button, the program searches its dictionary and inserts a nondisplaying character (ASCII 31) at each acceptable division point. Once the process is completed, you pull down the Edit menu and choose Copy to bring the text back to the Clipboard. Returning to your application, you paste your newly hyphenated text into the previous (still-highlighted) version, which is then replaced.

Word, MacPublisher, and *PageMaker* all recognize ASCII 31 as a conditional hyphen. The hyphen replaces the special ASCII character for end-of-line words and hyphenates them when they're wrapped. The hyphens appear on the screen and in the printed text, while all other conditional hyphens remain hidden. (In *Microsoft Word,* you can display them on screen with the Show Paragraphs command.)

You can use *Mac-Hy-phen* to hyphenate a single word, a few lines, or an entire file. If you have previously formatted your text, however, the hyphenation process will remove the formatting and the typeface as well. Consequently, you should first create and edit your text and then add conditional hyphens before formatting text.

Flexible Formatting

Mac-Hy-phen adds conditional hyphens to the entire text you designate, not just at line endings in the current version. So, even if you reformat the text endlessly, changing margins or column widths, any words with conditional hyphens will break at the end of a too-long line. Words without conditional hyphens will wrap without dividing. If you've edited the text after adding conditional hyphens, though, you'll have to run *Mac-Hy-phen* on the revisions (or the whole document) to make sure that all possible word breaks are recognized when the text is formatted or reformatted.

This is a test. This is not a real emergency. If this were a real emergency, you would be instructed to turn to a more important radio station on your dial. This is an unimportant radio station, but we are nonetheless required to comply with the Federal Communications Commission's requirements that we broadcast these tests of the emergency signal. Thank you for your attention.

This is a test. This is not a real emergency. If this were a real emergency, you would be instructed to turn to a more important radio station on your dial. This is an unimportant radio station, but we are nonetheless required to comply with the Federal Communications Commission's requirements that we broadcast these tests of the emergency signal. Thank you for your attention.

With Hyphens

By hyphenating narrow-column text, you reduce the ragged effect of the right margin and also cut a line of text.

Playing by the Rules

Mac-Hy-phen won't divide syllables of fewer than three letters at the beginning or end of a word, eliminating many logical word breaks. In addition, *Mac-Hy-phen* only recognizes words in the form in which they appear in its dictionary; for example, if you add the suffix "ize" to "conceptual," *Mac-Hy-phen* will not show the suffix as a separate syllable.

Its Desktop Corner

As of this writing, *Mac-Hy-phen* is the only available program of its kind for the Mac. Therefore, despite its lack of an editable dictionary, its refusal to recognize suffixes, and its inability to retain text formatting, *Mac-Hy-phen* has earned a place on the desktops of Macintosh users—especially for narrow-column text (see "With Hyphens")—to smooth choppy ragged-right margins and to evenly space justified text. If you're a desktop publisher who doesn't fancy eyeballing your layouts and thumbing through the dictionary for proper word breaks, *Mac-Hy-phen* could be the utility for you.—*Jeremy Joan Hewes*

See *Where to Buy* for product details.

Tile Away the Hours

***Shanghai** prerelease*

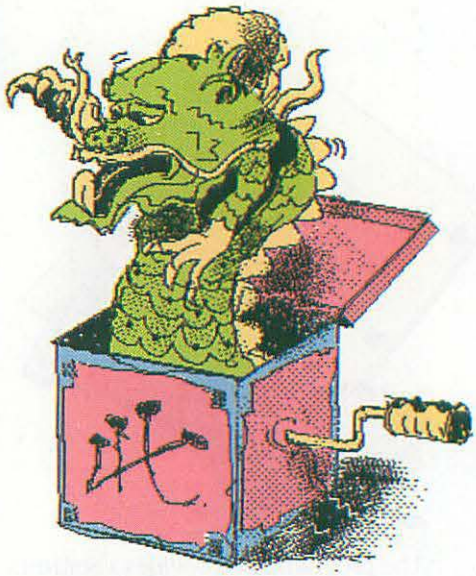
***Strategy game. Pros:** Very engaging; requires little learning time. **Cons:** Can be habit-forming. **List price:** Version 1.0 $44.95. **Requires:** 128K. **Copy protection:** Not copyable.*

Activision's *Shanghai* is a simple but surprisingly addictive game. Although it displays tiles adorned with Chinese characters, *Shanghai* is not a computer version of mah-jongg. Rather, it is reminiscent of games like solitaire, Concentration, and dominoes.

Piles of Tiles

Your starting layout—called a dragon—consists of 144 tiles, stacked in eight rows, up to five deep. A tile's border indicates which layer it occupies: the thickest border represents the top of the stack; the thinnest represents tiles on the bottom layer. The program randomly generates a new dragon for each game. As with solitaire, it's not always possible to win a randomly dealt game of *Shanghai*. If you find the random dragon too frustrating, you can choose one of 18 predefined dragons that *Shanghai*'s author assures us can be won.

The object is to find matching tiles that are not blocked, or covered by other tiles, and remove them from the dragon until no tiles are left (or until you get stuck). Because many of the tiles are marked with Chinese characters, just locating matches can be a challenge until the patterns become familiar.

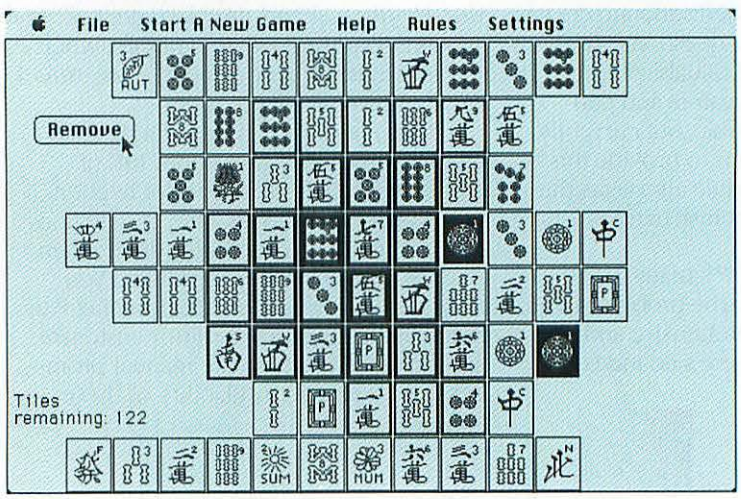


Playing Options

You can play *Shanghai* alone or with several players who remove tiles from the same dragon or from separate but identical dragons. You can impose time limits for each move or allow unrestricted play. You can also play challenge matches in which two players take turns playing the same dragon, against each other and against the clock. The program lets you save games in progress.

You can start a game over with the same dragon, back up a move, ask to see all possible moves, peek at what's hidden beneath a tile, or seek help on rules and strategy. Although it's disappointing to spend a half hour matching tiles only to reach a dead end, I found I could win often enough to keep from getting too frustrated. And because the game generates a new dragon within seconds, I frequently found myself sticking around for "just one more game." —*Rusel DeMaria*

See *Where to Buy* for product details.



Enter the Dragon

Winning Activision's Shanghai *requires strategy as well as concentration, as you attempt to find matching pairs in a pyramid of 144 tiles.*


Letraset Understands Design... LetraPage™ Delivers It!
For 25 years, Letraset has supplied professional artists and designers with creative tools. That experience is the heart of a new software package for the Macintosh computer. Effective communication is still a challenge. But now there's a program that offers professional solutions.

Communication by Design... Design by Choice

It's one thing to design and produce printed material. But it's another to get it read. The solution is extensive choice and the power to explore it creatively. That's why LetraPage has more design options than any other program currently available.

Virtually Unlimited Graphic Effects

The LetraPage Graphics Palette offers a unique design vocabulary to add attention getting touches to your work. Nothing else comes close.

- 96 fill patterns for use individually or overlaid to produce unlimited visual effects.
- The same patterns can become variable width rules and multiple rules or mixed with standard rules.
- Dramatic drop shadows turn rectangles, circles and ovals into design elements.
- A graduated range of 9 tints gives you more creative control when fine tuning visuals.

A New Standard for Letter Spacing.

Look at the ways LetraPage handles type professionally while eliminating page make-up's biggest problem—poor letter spacing.

- Automatic and manual kerning dramatically improve letterspacing... greater impact in headlines—better readability in text.
- If the words don't fit, improve them right on the layout with LetraPage's word processing capabilities.
- A 93,000 word hyphenation dictionary combines with letter-spaced justification to produce smooth, even text.

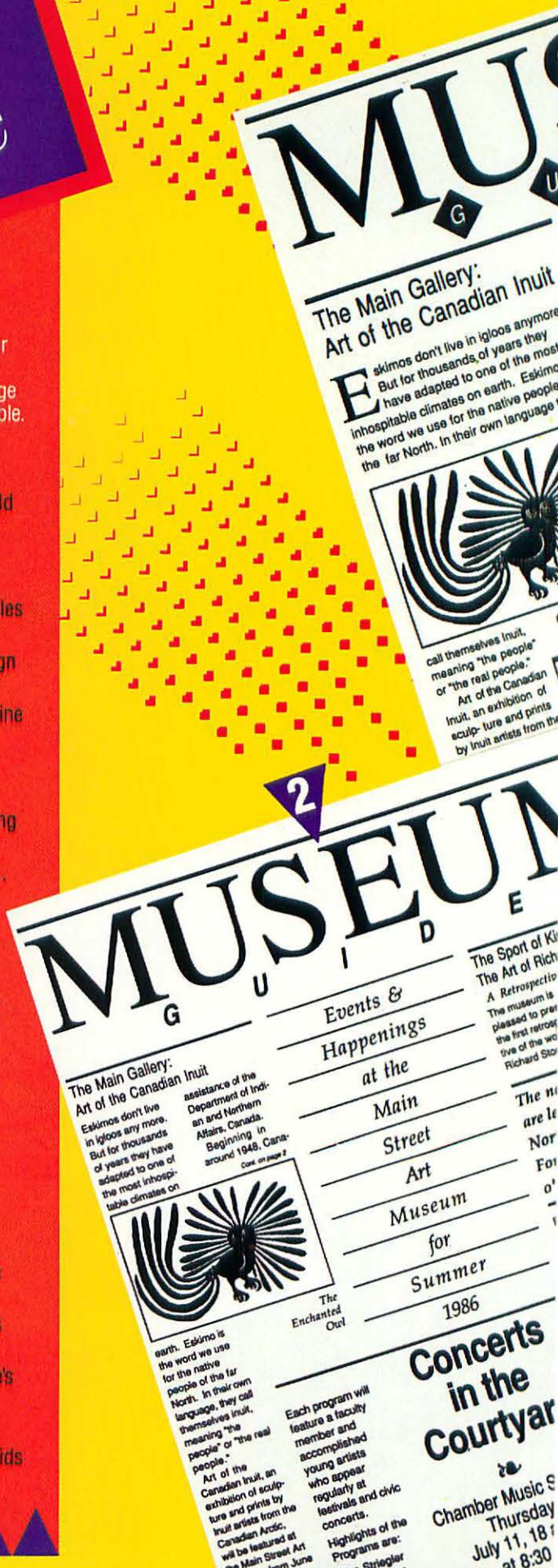
PLUS **Create type as large as your page...it's a first in page design software.**

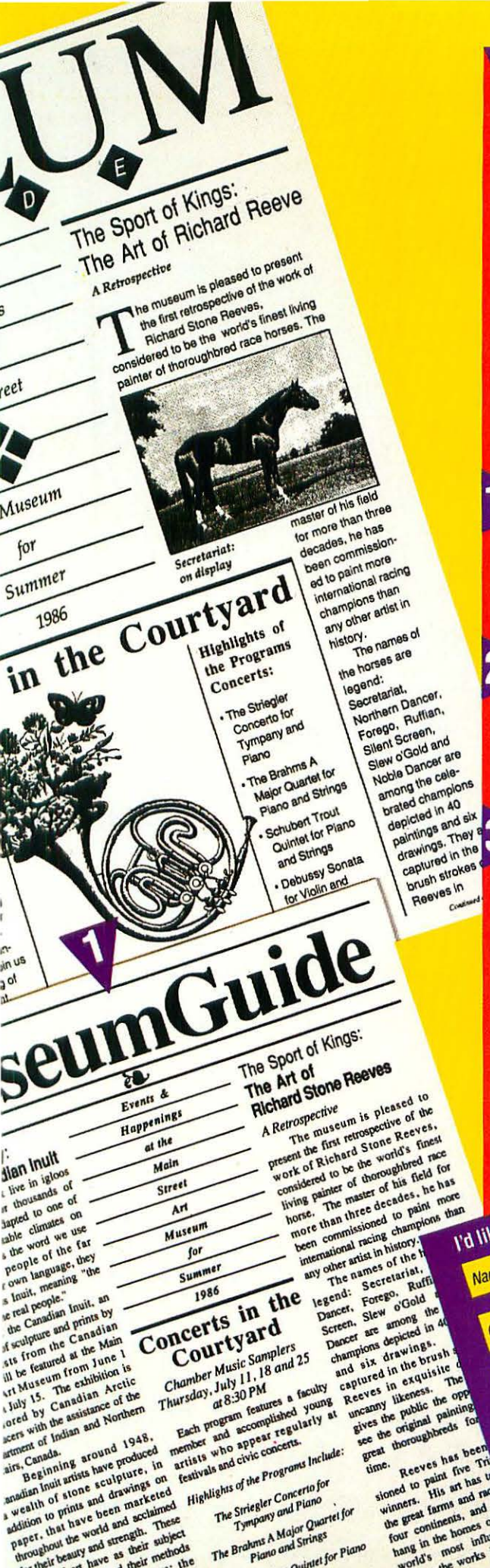


LetraPage Works the Way You Do.

Your tools should support the creative process without intruding on it. LetraPage offers more layout options than any other program...and the power to explore them for the best solution.

- An on-screen tool box of 14 layout and drawing tools ensures ideas are realized almost as quickly as they are conceived.
- Text and graphic elements are precisely positioned using LetraPage's spec sheets...final art is produced to impeccable standards.
- Only LetraPage separates art to control colors individually.
- The options also include document lengths over 1000 pages and grids up to 48 equal columns.





UM

D E

The Sport of Kings:
The Art of Richard Reeve

A Retrospective

The museum is pleased to present the first retrospective of the work of Richard Stone Reeves, considered to be the world's finest living painter of thoroughbred race horses. The master of his field for more than three decades, he has been commissioned to paint more international racing champions than any other artist in history.

The names of the horses are legend: Secretariat, Northern Dancer, Forego, Ruffian, Silent Screen, Slew o'Gold and Noble Dancer are among the celebrated champions depicted in 40 paintings and six drawings. They are captured in the brush strokes of Reeves in

Secretariat: on display

s
reet
Museum
for
Summer
1986

in the Courtyard

Highlights of the Programs Concerts:

- The Striegler Concerto for Tympany and Piano
- The Brahms A Major Quartet for Piano and Strings
- Schubert Trout Quintet for Piano and Strings
- Debussy Sonata for Violin and

1

seumGuide

Events & Happenings at the Main Street Art Museum for Summer 1986

dian Inuit
live in igloos
r thousands of
dapted to one of
table climates on
s the word we use
people of the far
r own language, they
s Inuit, meaning "the
e real people."
the Canadian Inuit, an
f sculpture and prints by
sts from the Canadian
ill be featured at the Main
rt Museum from June 1
July 15. The exhibition is
ored by Canadian Arctic
acers with the assistance of the
artment of Indian and Northern
airs, Canada.

Beginning around 1948, anadian Inuit artists have produced a wealth of stone sculpture, in addition to prints and drawings on paper, that have been marketed throughout the world and acclaimed for their beauty and strength. These rt have as their subject d their methods

The Sport of Kings:
The Art of Richard Stone Reeves

A Retrospective

The museum is pleased to present the first retrospective of the work of Richard Stone Reeves, considered to be the world's finest living painter of thoroughbred race horse. The master of his field for more than three decades, he has been commissioned to paint more international racing champions than any other artist in history.

The names of the h
legend: Secretariat,
Dancer, Forego, Ruffi
Screen, Slew o'Gold
Dancer are among the
champions depicted in 4
and six drawings.
captured in the brush s
Reeves in exquisite d
uncanny likeness. The
gives the public the opp
see the original painting
great thoroughbreds fo
time.

Reeves has been
sioned to paint five Tri
winners. His art has tak
the great farms and race
four continents, and his
hang in the homes of sc
world's most influentia
the works in the show

Continued on page 4

Concerts in the Courtyard

Chamber Music Samplers
Thursday, July 11, 18 and 25 at 8:30 PM

Each program features a faculty member and accomplished young artists who appear regularly at festivals and civic concerts.

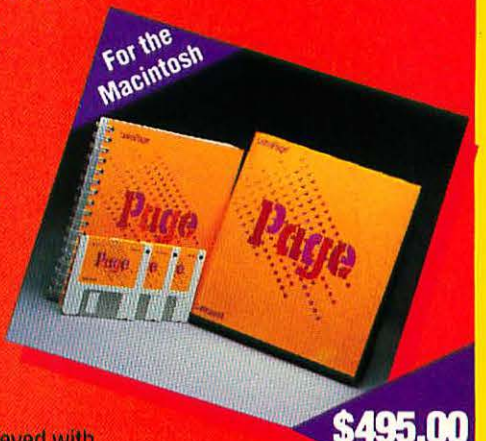
Highlights of the Programs Include:

The Striegler Concerto for Tympany and Piano

The Brahms A Major Quartet for Piano and Strings

Quintet for Piano

LetraPage Supports Your Skills and Expands with Them.



$495.00

LetraPage rewards the regular user with many levels of creative control and productivity. More sophisticated graphics are possible; more complex publications and documents can be produced. These examples show what we mean:

1 Tight letter spacing—achieved with LetraPage kerning—gives the masthead its impact.

- LetraPage's hyphenation and justification smooths out the text for a clean even appearance.
- Text is turned into illustration by centering a sentence and using the Picture Spec Sheet to duplicate the rules quickly and easily.

2 LetraPage offers up to 48 columns per page—so a 6 column grid was chosen to add visual interest.

- The masthead gets added drama with a LetraPage custom size—127 point!
- An original drawing was scanned in, then precisely sized with LetraPage's unique percentage scaling.

3 A visual counterpoint to the large type was created by producing reverse letters on the diamond shapes.

- Vertical rules from the tool box were drawn directly on the layout to give the "Concerts" article a subtle style of its own.
- LetraPage's cropping tool eliminated unwanted detail from the illustration of the horse.

There's a lot more to LetraPage. Like built-in telecommunications, color capabilities for the ImageWriter II and a save page to disk feature. Contact your Authorized Apple Dealer and ask for a demonstration. **Or call us at 1-800-255-2550.** We'll tell you the name of your nearest dealer and send you more information.

I'd like to learn more about LetraPage for the Macintosh. Please send me details.

Name/Title

Company

Address

City/State/Zip

Telephone

MW

Letraset P.O. Box 3900 Peoria, IL 61614
In Canada 416-475-7511.

LetraHyphen™

Improves the Appearance of Text Setting... Automatically.

LetraHyphen is a dictionary-based hyphenation program that enhances the appearance of all styles of text setting. Using a 93,000 word dictionary, it places a hyphen at grammatically correct word-break points throughout the text. If the text is edited or a column width change occurs, hyphens are deleted and added to the revised text. The end result is more polished material and the credibility that goes with a professional appearance.

...and Saves Pages

Since LetraHyphen uses space more economically, the number of pages required for the same amount of text can be reduced. You save money by using less paper.

LetraHyphen is for use with MacPublisher II, Microsoft Word, PageMaker and any other Macintosh word processing or desktop publishing program which supports discretionary hyphenation.



LetraIndex™

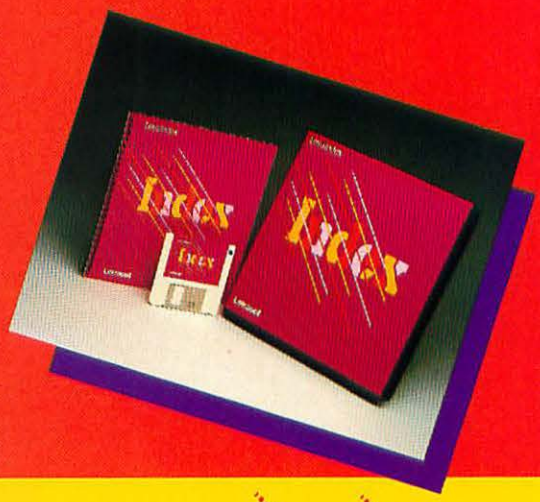
Dramatically Reduce Time Spent Indexing!

LetraIndex is an index generator. It creates an index from a master list of key words determined by the user. Alternatively, LetraIndex can create a master list which can be the index. With either approach, the tedious and time-consuming task of creating an index can be substantially reduced.

Built-in Flexibility

LetraIndex is also useful throughout the creation of the document. Draft indexes may be prepared at any time to assist editing. Word counts for the entire document can be generated quickly. LetraPage can also re-number the index if page numbers change.

LetraIndex is compatible with MacWrite2.2, disk-based MacWrite (4.5–on) and Microsoft Word.



COMMUNICATION *by Design*

Letraset®

⊗ ESSELTE ©Letraset USA 1986

Macintosh is a trademark licensed to Apple Computer, Inc. MacWrite, ImageWriter and LaserWriter are trademarks of Apple Computer, Inc. MicroSoft Word is a trademark of MicroSoft Corporation. PageMaker is a trademark of Aldus Corporation. MacPublisher II is a trademark of MicroCosmos. LetraPage, LetraHyphen, and LetraIndex are trademarks of Letraset USA, a division of Esselte Pendaflex.

MACWORLD
1986 Annual Index

by Erfert Nielson

This index covers the 12 issues of *Macworld* published during 1986. In a departure from our previous indexes, we've listed most products alphabetically as well as under appropriate subject headings. For example, *DiskInfo* is listed under its own name and under Desk accessories, Hard disks, Public domain, and Utilities. Boldface page numbers indicate a reference to a review (r) or a feature-length article.

A

Accountant Inc., ***Sep 88***
Accounting
- Accountant Inc., ***Sep 88***
- AMS General Ledger/Checkmark Payroll, *Sep 88*
- Arthur Young auditing software, *Apr 57*
- Back to Basics, ***Sep 88***
- dbsPay, ***Sep 88***
- Dollars and Sense, *Apr 55,* ***Sep 88, Dec 183***
- Gallery Finance, ***Sep 88***
- General Accounting, ***Sep 88***
- General Ledger for the Macintosh, ***Sep 88***
- Great Plains Hardisk Series, ***Sep 88***
- Insight, ***Sep 88, Oct 122 r,*** *Nov 57*
- Maccountant, ***Sep 88***
- MacOneWrite, ***Sep 88***
- MacOneWrite Cash Disbursements, ***Mar 123 r***
- MacStore/AP with GL, ***Sep 88***
- Open for Business, ***Sep 88***
- Palantir Financial Series, ***Sep 88***
- Personal Accountant, ***Sep 88***
- Plains & Simple, ***Sep 88***
- Rags to Riches, ***Sep 88, Dec 195***
- ShopKeeper, ***Sep 88***
- Strictly Business, ***Sep 88***
- Timecard, ***Sep 88***
- Turbo Maccountant, ***Sep 88, Oct 156 r,*** *Nov 196*
- Versa Series, ***Sep 88***
- WOS Fund Accounting System, ***Sep 88***

Achbar Hebrew/English word processor, *Nov 154*
Acta, *Aug 61,* ***Oct 150 r***
Airborne!, *Dec 118*
Alarm Clock, *May 78*
AMS General Ledger/Checkmark Payroll, ***Sep 88***
The Ancient Art of War, ***Aug 147 r,*** *Dec 118*
Animation
- Graphics Magician, ***Oct 155 r***
- VideoWorks, *Apr 116, May 65,* ***122, Aug 108,*** *124, Nov 87*

Apollo workstation, *Jul 67*
Apple Cluster Controller, *Jul 121*
Apple Collection catalog, *Mar 54*
A.P.P.L.E. Co-op, *Oct 67*
Apple 800K external disk drive, ***Nov 106 r***
AppleLine, *Jul 121*
AppleLink, ***May 129,*** *Jul 121*
- user group project, *Jul 71*

Apple Personal Modem, *Jan 43*
Apple Programmer's and Developer's Association, *Oct 67*
- Technical Notes, *Nov 155*

Apple II
- compatibility with Mac, *Apr 20*
- GS, *Oct 69*
- Mac+ II transfer utility, *Mar 75,* ***Oct 161 r***
- transferring files to Mac, *Mar 68*

Architectural software, *Dec 85*
Art à la Mac, *Dec 130*
Art Grabber DA, *Jan 71, Mar 80, Nov 166, Dec 134*
Arthur Young auditing software, *Apr 57*
Artificial intelligence, *Feb 32, Mar 99, May 114*
Artisto DA, *Nov 166*
Assimilation, product distribution, *Oct 69*
AST 2000, *Sep 61,* ***98 r,*** *Nov 89,* ***Dec 143 r***
AST 4000, *Apr 86, Jun 102,* ***Sep 98 r***
Atlas PostScript Controller, *Dec 83*
Augment system, *Mar 116*

B

Back to Basics, ***Sep 88***
Backup utilities
- Copy II Mac, *Mar 80, Aug 52*
- Flashback, ***Nov 124***
- Hard Disk Util, *Apr 80,* ***May 148 r***
- HD Backup, ***Nov 124***
- HFS Backup, ***Nov 124***
- MacBackup, *Mar 80, Aug 52*

Balance of Power, *Feb 63, May 13,* ***Jul 146 r,*** *Dec 118*
Banner Maker subroutine, *Apr 166*
BASIC. *See* Microsoft BASIC
Battery Pak, ***Feb 180 r,*** *Mar 80*
- update, *Nov 196*

Beamac II, *Sep 125*
BenchTop Instrument, *Oct 136*
Bernoulli Box, *Apr 87, Jun 102,* ***Sep 98 r***
BetNet, *Nov 83*
BigMack Twin Pack disk/tape drive, *Nov 89*
The Big Picture monitor, *Nov 89*
Billing programs, *Dec 195*
Blast, *Jul 121*
Bomb error codes defined, *Sep 83*
Brother printers, printing Word documents on, *Dec 44*
Brother typewriter, printing bold text on, *Sep 191*
Building Blocks, *Dec 130*
Bulk Mailer, ***Jul 153 r***
- update, *Dec 206*

Business Filevision, ***Mar 94 r,*** *Aug 80, Dec 85*
Business graphics
- ClickOn Worksheet, *Mar 80*
- ColorChart, ***Oct 152 r***
- Cricket Graph, ***Jul 95 r,*** *116, Oct 136, Nov 38*
- Excel, XY scatter graphs in, *May 71*

(continues)

Business graphics (continued)
Microsoft Chart, *Mar 80*
MindSight, *Apr 96*
MockChart, *Mar 80*
Bytes of Fright, *Dec 130*

C

CAD, *Sep 125, Nov 100, 112. See also* Graphics
Calculator, compatibility with numeric keypad, *Jul 56*
Calculator Construction Set, ***Aug 134 r***
Calliope, *Aug 61*
Cauzin Softstrip Reader, *Feb 59,* ***Oct 164 r***
CD ROM, *Feb 100, Jun 13, Dec 171*
sound and music disk, *Jun 71*
Championship Boxing, ***Feb 153 r;*** *Dec 118*
Change Font DA, *Mar 70*
Charts. *See* Business graphics
CheapPaint DA, *Jan 71, Mar 80*
ChemDraw, *Oct 136*
Chemistry applications, *Oct 136*
China, Mac in, *Feb 13*
Chromatron monitor, *Feb 57, Jul 62*
Circuit design, *Sep 125,* ***Dec 150 r***
Clean Image print head cleaner, *Nov 186*
ClickArt, *Dec 130*
ClickOn Worksheet, *Mar 80*
Clip-art overview, ***Dec 130 r***
Clip Art, Vol. 1, *Dec 130*
Clipboard, *Jan 68, Feb 82, Nov 173, Dec 104*
saving graphics from in MBASIC, *Feb 87*
Clip Objects, *Dec 130*
CLR libraries, ***Dec 149 r***
College Consortium
Reed College's SuperChroma, *Jul 65*
Wheels for the Mind, *Nov 87*
Color
Chromatron monitor, *Feb 57, Jul 62*
ColorChart, ***Oct 152 r***
ColorMate, ***Jan 113 r; Jul 113***
ColorPaint, *Jul 65, Nov 100*
ColorPress, *Jul 113,* ***Dec 141 r***
ColorPrint, ***Jul 113***
Cricket Graph, ***Jul 95 r;*** *116, Oct 136, Nov 38*
Dimension, *Sep 125, Nov 100*
Dunn Color, *Nov 100*
Dunn Instruments Film Recorder, *Jul 65, 95*
graphics overview, *Nov 100*
Lasergraphics MPS-2000, *Jul 95, 113*
MacPalette, ***Jul 113***
Matrix PCR, *Jul 95*
printing, ***Jul 113***
Silicon Press, *Jul 113*
SuperChroma, *Jul 65*
VMI color monitor, *Sep 125, Nov 100*
ColorChart, ***Oct 152 r***
ColorMate, ***Jan 113 r; Jul 113***
ColorPaint, *Jul 65, Nov 100*
ColorPress, *Jul 113,* ***Dec 141 r***
ComicWorks, *Aug 59,* ***Sep 133 r***
Communications, *Jul 23. See also* MacTerminal
Apple Cluster Controller, *Jul 121*
AppleLine, *Jul 121*
AppleLink, ***May 129,*** *Jul 71, 121*
Apple Personal Modem, *Jan 43*
Blast, *Jul 121*
books for beginning telecommunicators, *Feb 82*
CompuServe, *Feb 82, Jun 25, Jul 71, 126*
disabling call waiting, *Jul 168*
Excel, downloading data for, *Jul 126*
FastPath gateway, *Jun 129*
FreeTerm, *Jan 63, Mar 68,* ***Aug 100 r***
GEnie, *Aug 57,* ***Nov 141 r***
Glue, *Oct 73,* ***Dec 104, 144 r***
Griffin Terminal, *Jul 121*
with IBM PC, *Dec 104*
InterBridge, *Jun 126, Nov 168*
inTouch, *Apr 46, Jul 121*
Maccessories Portable Modem, ***Sep 176 r***
MacDasher, *Jul 121*
MacKermit, *Jul 121*
MacLine, *Jul 121*
MacLink, *Dec 104*
MacMenlo, *Jul 121*
MacTep, *Jul 23*
Mac/2392, *Jul 121*
with mainframes, ***Jul 121***
MAUG, *Feb 82, Jun 25*
MicroPhone, *Jul 23, 121,* ***133 r***
with minicomputers, ***Jul 121***
MockTerminal, *Jan 63*
modem, connecting 25-pin type to Mac, *Jan 63*
modem port, setting up with MBASIC, *Jan 51*
Mouse Exchange BBS, ***May 160 r***
Netway 1000, *Jul 121*
Northern Telecom/Apple agreement, *Apr 59*
pcLink, *Jul 121*
Portal, *Oct 71*
ProModem 1200, ***Apr 129 r;*** *Nov 36*
Red Ryder, *Apr 50, Jul 23, 121, 126, Aug 117*
with remote Mac, *Nov 168*
Smartcom II, *Jul 23, 121*
Straight Talk, *Jul 121*
tables, downloading for spreadsheets, *Nov 166*
Tandy 200 connection, *Jul 168*
Tekalike, *Jul 121, Sep 40*
Telescape, *Jul 121*
TurboDownload, ***Nov 145 r***
VersaTerm, *Jul 121*
Visions-Plus, *Jul 121*
Visual/Voice MAUG Conferencing, *Jun 25*
Compact disks, *Feb 100, Jun 13, Dec 171*
CompuServe, *Feb 82, Jun 25, Jul 126*
Apple public forum, *Jul 71*
ConcertWare+, *Feb 93, Sep 27,* ***Dec 108***
Consultant, ***May 138 r***
Copyrights, software, *Jun 39*
Copy II Mac, *Mar 80, Aug 52*
CrashFix, *Oct 79*
Cray X-MP, *Nov 81*
Cricket Draw, *Nov 91, Dec 89*
Cricket Graph, ***Jul 95 r;*** *116, Oct 136, Nov 38*
Crunch, *Aug 80*

D

Dark Castle, *Apr 116*
Database management. *See also* Jazz; Microsoft Excel; Microsoft File
applications tips, ***Aug 80***
Business Filevision, ***Mar 94 r;*** *Aug 80, Dec 85*
Crunch, *Aug 80*
dBase Mac, *Oct 71*
dMac III, *Sep 61*
Double Helix, *Mar 61, May 100, Aug 80*
FileMaker, *Jun 89, Aug 80*
Filevision, ***Mar 94 r;*** *Aug 80, Dec 85*
Helix, *Mar 61, May 100,* ***Jun 120,*** *Aug 80*
Interlace, ***May 100 r;*** *Aug 80,* ***Oct 126***
MacBase, ***May 100 r***
My Office, ***Feb 143 r***
Notes for Excel, *Jan 44*
Notes for Jazz, *Jan 44*
Omnis 3, ***May 100 r;*** *Aug 80, Dec 89*
OverVue 2.0, *May 103, Aug 47, 80*
Record Holder, *Aug 80,* ***Sep 136 r***
RunTime Helix, *Mar 61*
test file transfer between databases, *Dec 104*
Data disks, *Nov 173*
DataFrame, *Jun 102,* ***Sep 98 r;*** *Nov 89*
DataPort SCSI adapter, *Sep 65*
DataSpace DS800 disk drive, ***Nov 106 r***
Data transfer, ***Dec 104***
da Vinci Graphics Series: Building Blocks, *Dec 130*
dBase Mac, *Oct 71*
dbsPay, ***Sep 88***
DecisionMap, ***Apr 102 r***
Déjà Vu, ***Jan 120 r;*** *Feb 63, Dec 118*
Deluxe Music Construction Set, *Feb 93,* ***109 r;*** *Apr 44,* ***Dec 108***
DesignScope, *Sep 125*
Desk accessories (DAs). *See also* Clipboard; Scrapbook
Acta, *Aug 61*
Alarm Clock, *May 78*
Art Grabber, *Jan 71, Mar 80, Nov 166, Dec 134*

(continues)

This is the Only Aspiring Young Professional We Could Find That Had a Legitimate Excuse for Not Using MacLightning.

To those of you who have made MacLightning™ the nation's best-selling spell checker in just six short months, we say *thanks!*



To those of you who, for one reason or another, have not yet joined the ranks of our satisfied users we introduce **MacLightning version 2.0**. Now there can be no excuse!

When MacLightning made its debut early this year it was the **only** "interactive" spelling checker for the Macintosh. Thanks to Merriam Webster's Ninth New Collegiate Dictionary, a 45,000-word Thesaurus and a long list of upgrades, **it still is.**

Operating in either the interactive or non-interactive mode, MacLightning spell checks your work at a blazing 75 + words per second. This puts it light years ahead of the competition.

Also available from Target Software are extensive dictionaries covering medicine, law and a host of other technical fields.

So if you'd like more information, or the name of a dealer near you, call Target Software toll-free. You'll never go wrong again.

MacLightning Version 2.0 – $99.95
Merriam Webster Thesaurus – $49.95
Merriam Webster Medical Dictionary – $99.95
Merriam Webster Legal Dictionary – $99.95

Target Software

National: 1-800-MAC-LITE (800-622-5483)
In Fla. (305) 252-0892

Target Software Inc. 14206 Southwest 136th Street, Miami, Florida 33186

Circle 478 on reader service card.

POWERFUL TIME BILLING & MAIL LIST FOR YOUR MAC!

LEGAL BILLING

Legal Billing is a time billing package designed specifically for attorneys and accountants. **Legal Billing** is a full featured system, and yet it is incredibly easy to use. Most firms are up and running in 30 minutes or less!

It's no wonder **Legal Billing** has prompted such comments as this: *"You have produced an excellent product. I would highly recommend it to all attorneys – large or small firms – it paid for itself in the first month."*

Here's what **Legal Billing** can do for your office:

- Allows simple and fast entry of information, automatically sorted by date, client, employee and activity
- Productivity reports customized by employee, client, date and activity
- Automatic interest added to past due balances
- Client statements formatted in most any way
- Multiple billing rates for each employee
- Aging Report can be customized
- Can be used with Microsoft Word
- True Work-In-Progress feature holds activity details from month to month

$595.

NEW from Satori Software

PROJECT BILLING

Project Billing is a time billing package designed for ad agencies, graphic designers, architects and engineers. This package will track all aspects of your project billing including budgets for time and expense, actual costs and billed out amounts for both employee and expenses, and project profitability.

It will also automatically mark-up expenses, and provide productivity reports by employee or project, plus print your client bills in a variety of formats.

This is how **Project Billing** can help your office:

- Tracks employee productivity by cost and billable rates
- Automatically marks up expenses
- Provides profitability analysis by project
- Tracks budgeting of time and expense
- Prints statements and can add interest to past due balances
- True Work-In-Progress holds detail from month-to-month
- Enables progress (partial) billing, while holding all detail

$695.

BULK MAILER

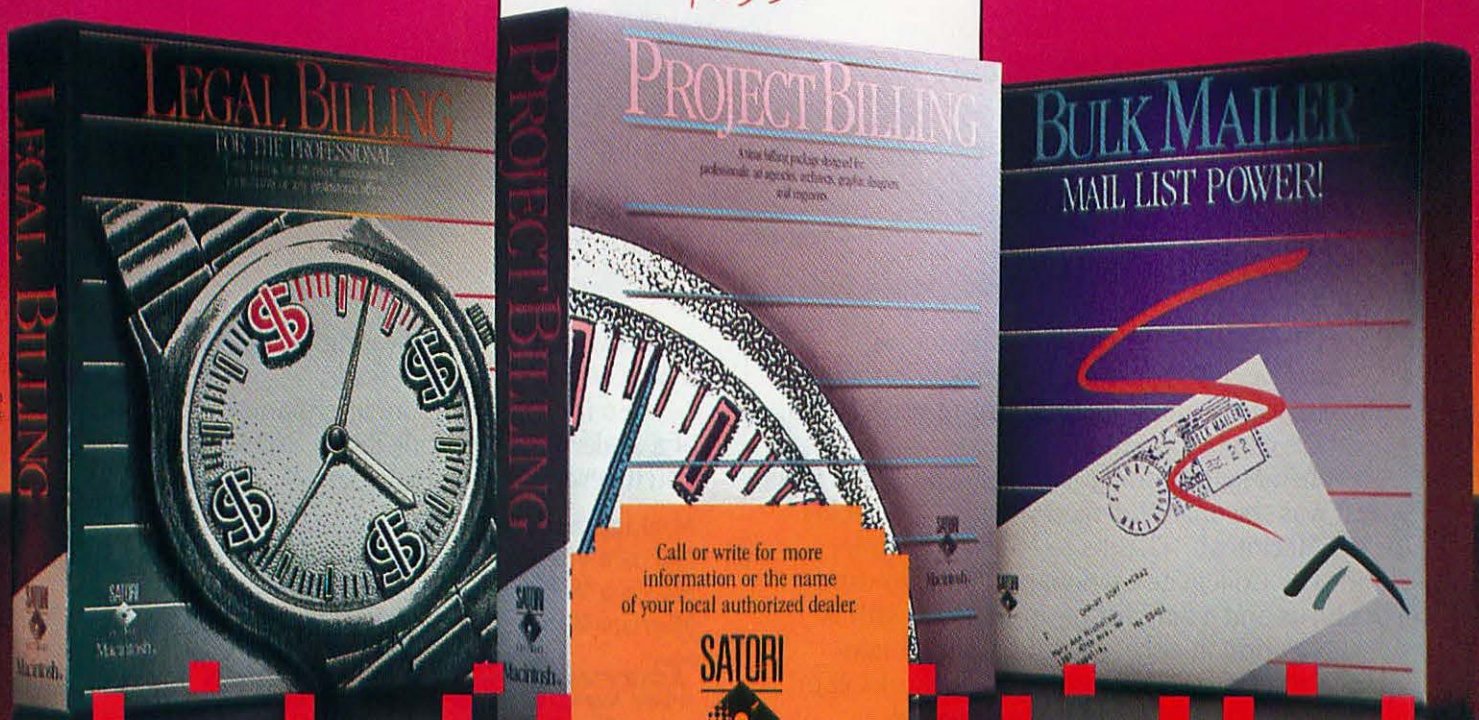
Bulk Mailer is a powerful program specially designed for managing mail lists. **Bulk Mailer** does everything you want in a mail list program, including duplication elimination, zip and alpha sorts, 1 to 4 up labels printed, easy-entry defaults, multiple label format, plus much, much more.

This is the only program to offer all these features:

- Duplication elimination
- Zip or alpha sort
- Car-rt sort or zip + 4
- 1 to 4 labels or roster format
- Powerful coding capabilities
- Sophisticated global editing and deleting
- Mail merge with Microsoft Word
- Easy-to-use entry defaults
- Coding and date expiration fields
- Large record capacity (up to 90,000 names)
- Hard disk compatible

$125.00 Bulk Mailer – up to 8,600 names

$350.00 Bulk Mailer + – up to 90,000 names



Call or write for more information or the name of your local authorized dealer.

SATORI SOFTWARE

Satori Software
2815 Second Avenue, Suite 590
Seattle, WA 98121 206/443-0765

Desk accessories (DAs) (continued)
Artisto, *Nov 166*
Bagels, ***Aug 100 r***
Battery Pak, ***Feb 180 r***, *Mar 80, Nov 196*
Calculator, compatibility with numeric keypad, *Jul 56*
Change Font, *Mar 70*
CheapPaint, *Jan 71, Mar 80*
ClickOn Worksheet, *Mar 80*
DiskInfo, *May 74*, ***Nov 124***
Extras, *Jan 68, Mar 80, May 74*
FileFinder, *Apr 57, Sep 52, Nov 196*
Financial Calculator, *Mar 80*
FixPic, *Aug 66*
HFS Locator, *Sep 52*, ***Nov 124***
KnockOut, ***Aug 100 r***
Launcher, *Mar 80*
Le conjugueur, *Mar 65, Aug 44*
MockChart, *Mar 80*
MockPackage, *Mar 96*
MockWrite, *Mar 80*
Multi-Scrap, *Jan 68, Mar 80, Dec 134*
Notepad, *Dec 104*
Notes for Excel, *Jan 44*
Notes for Jazz, *Jan 44*
Quick and Dirty Utilities Vol. One, ***Feb 166 r***, *Mar 80*
QuickPaint, *Jan 71, Mar 80, Nov 166, Dec 134*
SetFile, *May 87*
Sidekick, ***Mar 106 r***
SkipFinder, *Mar 80*
Super Note Pad, *Mar 80*
TopDesk, ***Jun 137 r***
Transfer, *Apr 80*, ***Aug 100 r***
TurboDownload, ***Nov 145 r***
WindoWare Phone Book, *May 112*
Windows, *Apr 168*
Desk organizers
MegaDesk, ***Mar 137 r***
MockPackage, *Mar 96*
Sidekick, ***Mar 106 r***
TimeBase, ***Jun 150 r***
WindoWare Phone Book, *May 112*
DeskTop Art, *Dec 130*
Desktop publishing
clip art, *Dec 130*
Cohen, Eliot, *Dec 69*
commentary, *May 31, Dec 69*
in Congress, *Dec 91*
Fontographer, ***Jul 142 r***
Glue, *Oct 73*, ***Dec 104, 144 r***
JustText, *May 31*
LetraPage, *Nov 85*
MacPublisher update, *Feb 61, Nov 85*
MacTEX, *Nov 95*
PageMaker tips, ***Mar 110, Sep 117***
PS Compose, *Oct 75*
Publish! magazine insert, *Jul*
ReadySetGo updates, *Feb 61, Nov 93*
typesetting interfaces, *May 31, Oct 75, Nov 95, 151*
Desktop Publishing Objects, *Dec 130*
Digit-Art, *Dec 130*
Digitizers/scanners
Abaton, *Jul 80*
MacVision, *Mar 80*
Microtek, *Jul 80*
SpectraFAX, *Apr 87, Jul 80*
ThunderScan, *Feb 126, Mar 80, Nov 100, Dec 44*
tips for improving image, *Mar 167*
Dimension, *Sep 125, Nov 100*
Disk drives. *See also* Disks; Hard disks
Abaton Drive 5.25, *Dec 104*
Apple, ***Nov 106 r***
DataSpace, ***Nov 106 r***
Dayna FT100, *Dec 104*
double-sided, ***Nov 106 r***
5¼-inch, *Dec 104*
Haba, ***Nov 106 r***
magnetic field interference, *Oct 179, Dec 171*
Microtech, ***Nov 106 r***
Mirror Technologies, ***Nov 106 r***
P.K.I., ***Nov 106 r***
second internal, *Aug 57*
Warp Nine, ***Nov 106 r***
Disk editors, *Dec 171*
Disk/file management, ***Dec 171.*** *See also* Disk drives; Disks; Hard disks
alphabetizing files, *Apr 63*
colored disks, *Oct 91*
customizing disks for specific tasks, ***Mar 80***
cutting and pasting tips, ***Jan 68, Dec 104***
deleting files via desk accessories, *May 74*
disk caches, *Apr 80*
disk editors, *Dec 171*
DiskInfo, May 74, ***Nov 124***
Disk Librarian, ***Nov 124***
Disk Ranger, ***Nov 124***
FileFinder DA, *Apr 57, Sep 52, Nov 196*
Flashback, ***Nov 124***
HD Backup, ***Nov 124***
HFS, *Jan 76, Mar 59, Jun 102*
opening files in BASIC, *Jun 83*
using on single-sided disk, *Apr 64*
HFS Backup, *Nov 124*
HFS Locator, *Sep 52*, ***Nov 124***
initializing disks, *Sep 71*
Mac Disk Catalog, *Apr 63*
MacLabeler, *Apr 63, Aug 135*
MDC II, ***Nov 124***, *Dec 206*
more files on single-sided disk, *Apr 64*
myDiskLabeler, ***Aug 135 r***
Packer, ***Aug 142 r***
PacPaint, ***Aug 142 r***
RAM disks, *Apr 80, Dec 91*
tips for using 1 megabyte, ***Apr 80***
transferring data between applications, ***Jan 68, Dec 104***
TurboCharger, *Apr 80*
updating 400K start-up disks, *Oct 82*
DiskInfo DA, *May 74*, ***Nov 124***
Disk Librarian, ***Nov 124***
Disk Ranger, ***Nov 124***
Disks. *See also* Disk drives; Disk/file management; Hard disks
disk editors, *Dec 171*
introduction to, ***Dec 171***
using both sides of single-sided, *Jun 83, Nov 151*
write-protect tab, *Dec 171*
dMac III, *Sep 61*
DNA Inspector II, *Oct 136*
Document Conversion System, *Dec 104*
Document Modeler, ***Aug 104 r***
Dollars and Sense, ***Sep 88***
MoneyLink service, *Apr 55*
tips, *Dec 183*
Double Helix, *Mar 61, May 100, Aug 80*
Drafting. *See* CAD; Graphics
DrawArt, *Dec 130*
Dunn Instruments Film Recorder, *Jul 65, 95, Nov 100*
Dvorak keyboard, ***Oct 130***
Dynamac flat Mac, *Nov 85*

E

Early Model Personal Computer Contest, *Aug 13*
Easy3D, ***Jun 94 r, Aug 108***
clip art, *Dec 130*
update, *Dec 206*
Education
Academic Courseware Exchange, *Jun 65, Nov 87*
courseware, *Mar 61, Nov 87*
KidsTime, ***Sep 153 r***
Learning Tool, *Oct 73*
MacAuthor, *Jul 73, Dec 44*
MicroGrade, ***Nov 145 r***
Mississippi State College, *May 63*
Speller Bee, ***Apr 148 r***
Theatergame courseware, *Mar 61*
Vivarium project, *Aug 25*
Wheels for the Mind, *Nov 87*
Electric Dragon, *Mar 65*
Elfin robot, *Aug 55*
E-mail, *May 25*
AppleLink, ***May 129***, *Jul 71, 121*
Engineering workstations, *Sep 125*
Entertainment. *See* Games
Envelopes, printing on ImageWriter, *Oct 82*

(continues)

Equations, *Sep 192*
Error codes defined, *Sep 83*
Evelyn Wood Dynamic Reader, ***Oct 163 r***
Excel. *See* Microsoft Excel
Executive Office, ***Jul 108 r,*** *Nov 44*
ExperCommonLISP, *Nov 119*
ExperLink, *Sep 65*
ExperLisp, ***Mar 99 r,*** *Jul 61, Sep 65*
Expert systems, *Feb 32*
ExperLisp, ***Mar 99 r,*** *Jul 61, Sep 65*
ExperMultiOPS5, *Sep 65*
ExperOPS5, *Feb 32*
Insight, *Feb 32*
MacKIT, *Feb 32*
Nexpert, *Feb 32,* ***May 114***
Extras DA, *Jan 68, Mar 80, May 74*
EZ-Draft, *Sep 125, Nov 100,* ***112 r***
EZ Graphics, *Dec 130*

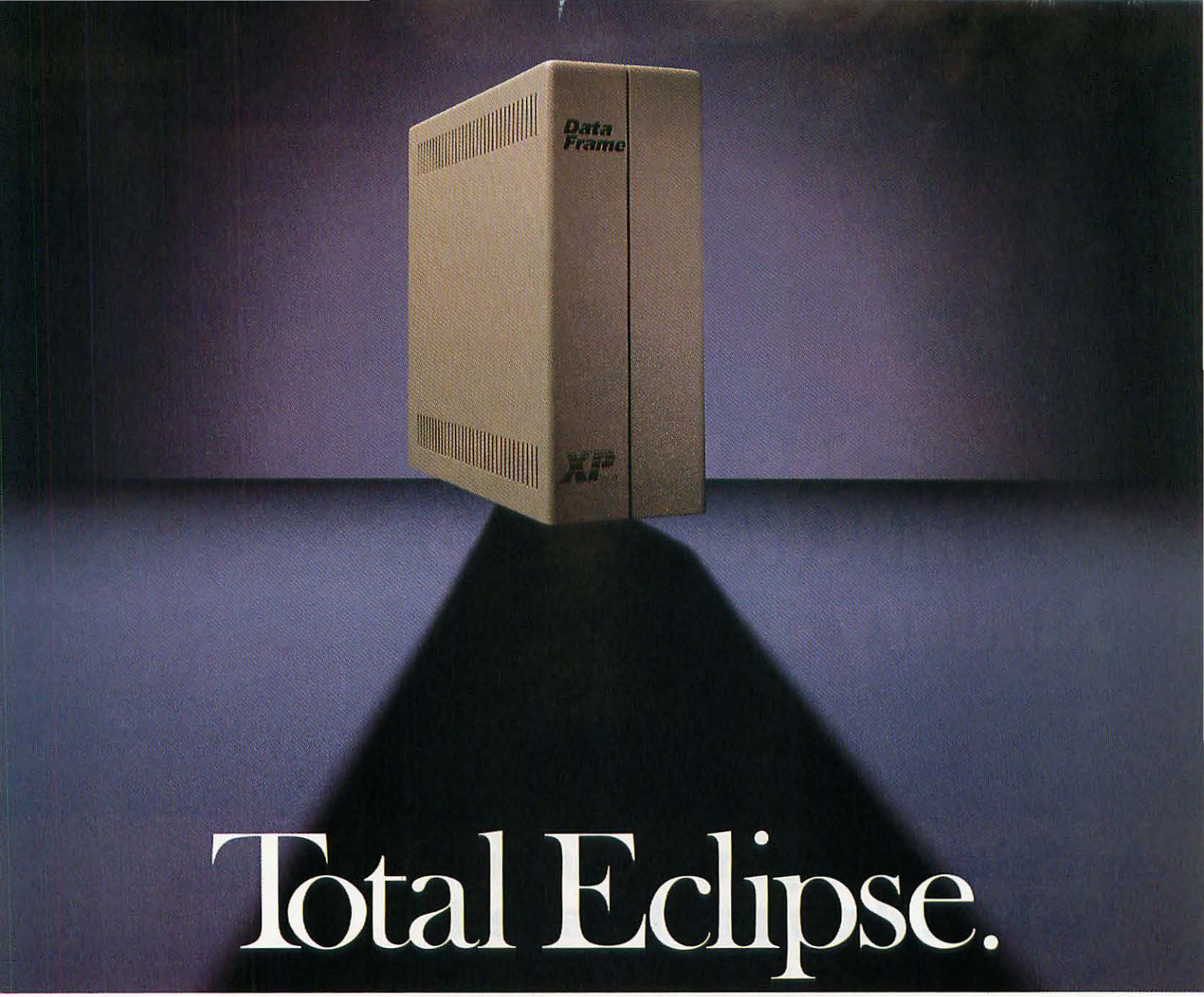
F

Falcon, *Nov 83*
Family Heritage File, *Nov 170*
FastMac memory upgrade, ***Feb 114 r***
FastPath gateway, *Jun 129, Dec 104*
FastPrint, *Oct 182*
Fedit, *Jun 75, Dec 171*
making files invisible, *Jun 78*
Plus, *Nov 158*
using to prevent System file switching, *Jun 78*
where to buy, *Jun 75, Nov 158*
File. *See* Microsoft File
FileFinder DA, *Apr 57, Sep 52, Nov 196*
File flags table, *May 87*
FileMaker, *Jun 89, Aug 80*
File management. *See* Disk/file management
File servers, *Apr 87,* ***Jun 126***
Filevision, Business, ***Mar 94 r,*** *Aug 80, Dec 85*
Financial Calculator DA, *Mar 80*
Financial planning
Financial Cookbook, ***Apr 132 r***
MindSight, ***Apr 96 r***
Finder, *Jan 81, Mar 57, May 93, Nov 93*
First Aid disk editor, *Dec 171*
FixPic DA, *Aug 66*
Flashback, ***Nov 124***
Flat Mac, *Nov 85*
Flight Simulator, ***Aug 129 r,*** *Dec 118*
Font/DA Mover, *Jun 175, 176, Nov 173*
Fontographer, ***Jul 142 r***
Fonts, *Nov 173*
Adobe, *Mar 59, Jul 88, Dec 91*
Allotype, *Jul 88*
assigning to single application with Font/DA Mover, *Jun 175*
Boston II, *Jul 83*
Casady, *Jul 88*
Century Software, *Jul 88*
Change Font DA, *Mar 70*
changing default font in MacWrite, *Mar 70*
designing custom, *Feb 126*
editing with ResEdit, *Jul 83*
FONTastic, ***Feb 126***
Font/DA Mover, *Jun 175, 176, Nov 173*
Fontographer, ***Jul 142 r***
font 12, MacPaint, *Nov 151*
fractions, *Jul 83*
identifying laser fonts in menu, *Nov 162*
Japanese, *Jun 65, Aug 41*
LaserWorks, ***Nov 136 r,*** *Dec 206*
LaserWriter Plus, *Mar 59*
MacDraw, problems with, *Sep 80*
MacPaint and MacWrite compared, *Nov 165*
Mac Plus capabilities, *Apr 87*
music, *Dec 108*
SciFonts, *Jul 83*
Sonata, *Dec 108*
tips, ***Jul 88***
Zap Printing, *Jul 88*
Foreign language applications
Achbar Hebrew/English word processor, *Nov 154*
E.G. Word (Japanese), *Jun 65, Aug 41*
Kanji Interface System, *Jun 65*
Le conjugueur, *Mar 65, Aug 44*
Forms
creating with FileMaker, MacDraw, MegaForm, ***Jun 89***
Document Modeler, ***Aug 104 r***
MacFill-In, *Dec 48*
MegaForm, *Jun 89, Jul 83, Nov 196*
Microsoft File, *Dec 48*
FORTRAN, Microsoft, ***Jun 110 r***
Fractions, *Jul 83*
FrameMac, *Sep 125*
FreeTerm, *Jan 63, Mar 68,* ***Aug 100 r***
FullPaint, ***Sep 142 r,*** *Nov 166*
Furniture, *Apr 55*
FX/20 hard disk, *Nov 89*

G

Gallery Finance, ***Sep 88***
Games, ***Dec 118***
Airborne!, *Dec 118*
The Ancient Art of War, ***Aug 147 r,*** *Dec 118*
Bagels, ***Aug 100 r***
Balance of Power, *Feb 63, May 13,* ***Jul 146 r,*** *Dec 118*
BetNet, *Nov 83*
Billiard Parlour, ***Aug 100 r***
Championship Boxing, ***Feb 153 r,*** *Dec 118*
Championship Star League Baseball, ***Mar 140 r***
Chess, *Feb 63*
commentary, *May 13, Dec 118*
Core War, *May 69*
Dark Castle, *Apr 116*
Déjà Vu, ***Jan 120 r,*** *Feb 63, Dec 118*
digitized sound in, *Apr 116*
Enchanted Scepters, ***Jun 145 r***
Exodus: Ultima III, ***Feb 170 r***
Falcon, *Nov 83*
Flight Simulator, ***Aug 129 r,*** *Dec 118*
Fokker Triplane Flight Simulator, ***May 144 r***
Gato, *Nov 196, Dec 118*
Grand Slam Tennis, *Nov 83, Dec 118,* ***141 r***
Grid Wars, *Feb 57*
KnockOut, ***Aug 100 r***
Leather Goddesses of Phobos, *Dec 118*
Life, *Dec 118*
MacGolf, ***Aug 144 r,*** *Nov 196, Dec 118*
Maze Wars + , *Nov 83*
Megaroids, *Dec 118*
Microsoft Flight Simulator, ***Aug 129 r,*** *Dec 118*
Mindshadow, ***Jun 160 r***
multiuser, *Nov 83*
One on One, ***Sep 178 r***
Orbiter, ***Sep 164 r***
Pinball Construction Set, ***Feb 176 r***
Racter, ***Jun 148 r***
Sargon III, *Dec 118*
Sierra Championship Boxing, ***Feb 153 r,*** *Dec 118*
Strategic Conquest, multiuser, *Nov 83*
3D Tic-Tac-Toe, ***Aug 100 r***
The Toy Shop, ***Dec 152 r***
Ultima III, ***Feb 170 r***
Uninvited, ***Sep 159 r***
Wator, *May 69*
Wizardry, ***Apr 138 r,*** *Dec 118*
World Builder, *Apr 116,* ***Nov 138 r***
Xyphus, *Dec 118*
Gassée, Jean-Louis, interview, *Aug 120*
Gato, *Dec 118*
update, *Nov 196*
GEM interface, *Jun 39*
Genealogy software, *Nov 170*
General Accounting, ***Sep 88***
General Ledger for the Macintosh, ***Sep 88***
GEnie, *Aug 57,* ***Nov 141 r***
Glasses, for viewing computer screens, *Nov 31*
Glue, *Oct 73, Dec 104,* ***144 r***
GPIB-Mac, *Oct 136*
Grand Slam Tennis, *Nov 83, Dec 118,* ***141 r***
Graphics, ***Nov 100.*** *See also* Business graphics; Color; MacDraw; MacPaint
Apollo workstation, *Jul 67*
Art Grabber, *Jan 71, Mar 80, Nov 166, Dec 134*
Artisto DA, *Nov 166*
bit-mapped, *Jan 70*
CheapPaint, *Jan 71*
Clip art overview, ***Dec 130 r***

(continues)



Total Eclipse.

Introducing DataFrame XP,™ the SCSI hard disk that eclipses all others.

DataFrame's superiority has been clear since Apple chose it to introduce the speed and performance of the Macintosh Plus. And now, while other manufacturers are still working to emulate our best selling DataFrame 20, SuperMac Technology™ is proud to introduce *the second generation hard disk that clearly outshines:* DataFrame XP.

The fastest SCSI under the sun.
DataFrame XP's advanced SCSI technology delivers virtually twice the speed of any other full SCSI drive—including Apple's recent release. Every program runs *faster.* And the programs that make frequent use of the disk run *much* faster.

Reliability that overshadows all others.
DataFrame is far and away the critic's choice. *The MACazine* gave DataFrame its highest rating. And *Macworld* says "DataFrame was one of the few completely trouble-free drives tested."

Unbeatable reliability is the reason SuperMac offers the only full one-year warranty in the business.

A design so simple, it's brilliant.
DataFrame XP comes with all the features of the original DataFrame. Preformatted for immediate set up and use, just stand the XP beside your Mac and plug it in. And it comes with free backup, print spooler, and self-test software *plus* free lifetime software upgrades.

DataFrame XP always stays cool because its vertical 'chimney' design efficiently vents heat without use of a fan (that's why it's quiet!). The XP sits beside your Macintosh, not inside or under it, so the drive won't heat your system.

How to make your Mac shine.
Just add a DataFrame XP. Or upgrade your existing DataFrame to XP performance. Both are every bit the DataFrame *The MACazine* called "the best buy for a SCSI hard disk considering price, product quality, performance, warranty and technical support."

Compare the rest of the SCSI drives. Then test the XP. And prepare for something overpowering: A total eclipse.

SuperMac Technology
950 N. Rengstorff Ave.
Mountain View, CA 94043
(415) 964-8884

SUPERMAC TECHNOLOGY

ExperTelligence

See us at the MACWorld Expo January 8, 9 and 10 Booth 542

Artificial Intelligence Solutions: We have the most of the best.

No longer do you have to suffer the slings and arrows of outrageously expensive systems. ExperTelligence is the answer.

Because there is no one solution to any problem, ExperTelligence has a full range of languages and Expert System Shells to meet your needs. From ExperCommonLisp™ to ExperProlog II™, including Le_Lisp™, ExperLisp™ and ExperLogo™. And from ExperFacts™ to ExperOPS5™. ExperTelligence has a range of affordable solutions.

The newest additions are ExperCommonLisp, the first and only compiled, double clickable, object-oriented, toolbox compatible "Common Lisp". And ExperProlog II, the international standard for Prolog designed by Alain Colmerauer, the inventor of the Prolog language.

ExperTelligence programs run on Macintosh™, IBM PC, Sun, DEC VAX and Apollo computers.

We are the leading developer of powerful A.I. solutions: Your imagination is our only limitation.

For more information call 1-800-828-0113, in California call 1-800-826-6144. Or write ExperTelligence, Dept. M, 559 San Ysidro Road, Santa Barbara, CA 93108



ExperTelligence, Inc.
Choose Your Future.

ExperTelligence, ExperLisp, ExperOPS5, ExperProlog II, and ExperFacts are registered trademarks of ExperTelligence, Inc. ExperOPS5 was developed by Science Applications International Corp. ExperFacts was developed by Mc-Systems. Macintosh is a trademark licensed to Apple Computer, Inc. The following are registered trademarks: Prolog II (Inria and PrologIA), Le_Lisp (Inria and ACT), IBM-PC (IBM Corp.).

Authorized Value Added Reseller

Circle 56 on reader service card

Graphics (continued)
ComicWorks, *Aug 59,* ***Sep 133 r***
Cricket Draw, *Nov 91*
Dimension, *Sep 125, Nov 100*
Easy3D, ***Jun 94 r, Aug 108,*** *Dec 130, 206*
EZ-Draft, *Sep 125, Nov 100,* ***112 r***
FixPic DA, *Aug 66*
4Paint, ***May 164 r***
FullPaint, ***Sep 142 r,*** *Nov 166*
gray scale, *Nov 100*
Knight-Ridder newspapers, *Feb 61, Nov 83*
MacApollo, *Jul 67*
MacBillboard, ***Nov 140 r***
MacCAD, *Sep 125*
MacDraft, ***Jan 92 r,*** *Jun 50, 89,* ***Nov 112 r***
MacMap, ***Nov 147 r***
MacModel, ***Jun 94 r***
MacPerspective, ***Nov 142 r***
MacPlot, *Jan 95*
MacPlots II, *Jan 95*
MacSpace, ***Jun 94 r***
Mac3D, ***Jun 94 r,*** *Sep 44*
MGMStation, ***Nov 112 r***
MiniCad, *Sep 125, Nov 112*
Paint Cutter, *Jan 58, 71, Nov 166*
PictureBase, ***Jul 151 r,*** *Dec 134*
PosterMaker, ***Nov 140 r***
PostScript, *Nov 91, Dec 89*
printing tips, *Jan 71*
Professional CAD for the Mac, *Sep 125*
QuickDraw, *Jan 70, 71*
QuickPaint, *Jan 71, Mar 80, Nov 166, Dec 134*
Schema, *Dec 85*
SuperPaint, ***Nov 133 r***
Tekalike, *Jul 121, Sep 40*
3-D, overview, ***Jun 94 r***
Graphics Magician, ***Oct 155 r***
Graphs. *See* Business graphics
Grateful Dead, use of Macs by, *Apr 57*
Great Plains Hardisk Series, ***Sep 88***
Griffin Terminal, *Jul 121*
Guide, *Nov 91*

H

Haba 800K disk drive, ***Nov 106 r***
HabaWord, *May 82, Nov 95, Dec 96*
Hard disks. *See also* HFS; HyperDrive
Apple HD 20, ***Jan 76 r, May 93***
AST 2000, *Sep 61,* ***98 r,*** *Nov 89,* ***Dec 143 r***
AST 4000, *Apr 86, Jun 102,* ***Sep 98 r***
Bernoulli Box, *Apr 87, Jun 102,* ***Sep 98 r***
BigMack Twin Pack, *Nov 89*
DataFrame, *Jun 102,* ***Sep 98 r,*** *Nov 89*
DiskInfo, *May 74,* ***Nov 124***
Disk Librarian, ***Nov 124***
DiskPlus, *Jun 102*
Disk Ranger, ***Nov 124***
Flashback, ***Nov 124***
FX/20, *Nov 89*
Hard Disk Util, *Apr 80,* ***May 148 r***
Hard 20 Plus, *Nov 89*
HD Backup, ***Nov 124***
HD 20 (Apple), ***Jan 76 r, May 93***
HD-20, HD-30 (MDIdeas), *Apr 87, Jun 102,* ***Sep 98 r***
HFS Backup, ***Nov 124***
HFS Locator, *Sep 52,* ***Nov 124***
introduction to, *Dec 171*
keeping applications on desktop, *Jun 178*
Locator Plus, *Dec 171*
LoDown, *Apr 87, Jun 102,* ***Sep 98 r,*** *Nov 89*
MacBottom, ***Jun 102 r, Sep 98 r***
MacFast, *Jun 102,* ***Sep 98 r***
MacMate 20, *Nov 89*
Magic, ***Sep 98 r***
MagNet, *Apr 87,* ***Sep 98 r,*** *Nov 89*
MDC II, ***Nov 124,*** *Dec 206*
MicahDrive AT 20, ***Jun 102 r,*** *Nov 89*
OverDrive, ***Jun 102 r***
overview, ***Jun 102 r, Sep 98 r***
Paradise Mac-10, *Jan 80,* ***Jun 102 r***
Plus-20/30, ***Sep 98 r***
ProApp, ***Sep 98 r,*** *Nov 89*
SCSI, *Jun 102,* ***Sep 98 r,*** *Nov 89,* ***Dec 143 r***
SD, ***Sep 98 r***
SlimLine, *Jun 102,* ***Sep 98 r***
Sun Streak, *Jun 102,* ***Sep 98 r***
tape-drive backup, *Sep 61*
utilities, ***Nov 124***
Hard Disk Util, *Apr 80,* ***May 148 r***
Hard 20 Plus, *Nov 89*
Hayden:Speller, ***Jan 131 r, Jul 103 r***
HD Backup, ***Nov 124***
HD-20, HD-30 (MDIdeas), *Apr 87*
Hebrew word processor, *Nov 154*
Helix, *Mar 61, May 100,* ***Jun 120,*** *Aug 80*
HFS, *Jan 76, Mar 59, Jun 102, Dec 171*
on single-sided disk, *Apr 64*
opening files in BASIC, *Jun 83*
software compatibility problems, *May 97*
tips for using, ***May 93***
HFS Backup, ***Nov 124***
HFS Locator, *Sep 52,* ***Nov 124***
High Score, *Nov 81,* ***Dec 108***
Home/personal software
Accessory Pak 1, *Jan 58*
Battery Pak, ***Feb 180 r,*** *Mar 80, Nov 196*
Calculator Construction Set, ***Aug 134 r***
Dinner at Eight, ***Mar 132 r***
Evelyn Wood Dynamic Reader, ***Oct 163 r***
Family Heritage File, *Nov 170*
Financial Cookbook, ***Apr 132 r***
Hayden:Speller, ***Jan 131 r***
Hippo Computer Almanac, ***Jan 138 r***
Housekeeper, ***152 r***
MacSpell +, ***Mar 125 r***
MegaDesk, ***Mar 137 r***
Mind Prober, *Mar 50*
myDiskLabeler, ***Aug 135 r***
Quick and Dirty Utilities Vol. One, ***Feb 166 r***
Sidekick, ***Mar 106 r***
Smart Alarms, *Nov 155, Dec 44,* ***145 r***
Smart Eyes, ***Oct 163 r***
Speed Reader II, ***Feb 163 r***
Speller Bee, ***Apr 148 r***
WillWriter, ***Apr 140 r,*** *Nov 196*
WindoWare Phone Book, *May 112*
X-10 Powerhouse, *Jul 69,* ***Nov 137 r***
HyperDrive, *Jan 80*
HyperDrive 20, ***Jun 102 r***
HyperDrive 2000, *Mar 63,* ***Aug 88 r,*** *Sep 125*
HyperNet, *Mar 63*
keyboard shortcuts for drawers, *Feb 200*
problems with backup program, *Jan 25, Oct 47*
speed, *Jun 54*
Hypertext, *Mar 116, Nov 91*

I

IBM PC
connecting ImageWriter to, *Aug 66*
exchanging dBase II files with Mac, *Sep 61*
exchanging files with Mac via MacLink, *Dec 104*
MacCharlie, ***Feb 120 r***
PC MacBridge, ***May 137 r***
printing files on LaserWriter, *May 137*
ImageWriter. *See also* ImageWriter II; Printers/printing
accessory kits, *Jan 54*
Clean Image head cleaner, *Nov 186*
connecting to Apple IIc, *Jan 54*
connecting to IBM PC, *Aug 66*
envelopes, printing on, *Oct 82*
icons denoting different versions, *May 179*
lubricating, *Feb 87*
magnet on top cover, *Nov 183*
print head overheating, *Feb 87*
prints only U's, *May 87, Nov 183*
tips, ***Nov 183***
ImageWriter II, ***Jan 86 r***
color printing, *Jul 116*
misaligned printing, *Sep 37*
paper-feed method, *Aug 70*
tips, ***Nov 183***
Inside Macintosh, *Feb 48*
updates, *Aug 75*
Insight, ***Sep 88, Oct 122 r,*** *Nov 57*
Integrated software. *See* Executive Office; Jazz; Microsoft Excel; Microsoft Works; Ragtime
Intelligence agencies, use of Mac by, *Nov 93, Dec 91*
InterBridge, *Jun 126, Nov 168*

(continues)

Interlace, ***May 100 r;*** *Aug 80,* ***Oct 126***
Intermedia, *Mar 116*
inTouch, *Apr 46, Jul 121*

J

Japan, Mac in, *Jan 47, 102*
Japanese word processor, *Jun 65, Aug 41*
Japanese Clip Art, *Dec 130*
Jazz
compared to Excel, *Apr 23*
data analysis, *Aug 80*
memory-saving tips, ***Jan 96***
Notes for Jazz, *Jan 44*
printing documents on letter-quality printer, *Jan 28*
readers' comments, *Aug 43, 44*
word processor, *Dec 96*

K

Kay, Alan, *Aug 25*
Keeper file server, *Jun 126*
Keyboard
compatibility with Mac Plus, *Oct 47*
Dvorak, ***Oct 130***
effect of memory upgrade on layout, *Feb 82*
long cable, *Mar 67*
MacKeymeleon, ***Sep 159 r;*** *Oct 134*
Mac Plus, *Apr 87*
MacQwerty, *Oct 134*
non-Macintosh used with Mac, *Jun 83*
PC MacKey, *Jun 83*
KidsTime, ***Sep 153 r***
Knight-Ridder newspapers, artwork distribution, *Feb 61, Nov 83*
KnockOut, ***Aug 100 r***

L

LabView, *Oct 136*
Languages. *See* Programming
Laptop Mac, *Nov 85*
Large-screen Mac, *Sep 59, Oct 67, Nov 89*
Lasergraphics MPS-2000, *Jul 95, 113*
Laser Quill, ***Nov 130 r;*** *Dec 96*
LaserServe, *Nov 89*
LaserServer, *Nov 89*
LaserSpool, *Nov 89*
LaserWorks, ***Nov 136 r;*** *Dec 206*
LaserWriter
blueprints, *Mar 172*
double-sided printing (collated), *Sep 191*
formatting documents for, *Feb 67*
Plus, *Mar 59*
printing IBM PC files on, *May 137*
print spooling, *Sep 37, Nov 36, 89*
viewing PostScript files, *May 180*
Launcher DA, *Mar 80*
Learning Tool, *Oct 73*
Leather Goddesses of Phobos, *Dec 118*
Le conjugueur, *Mar 65, Aug 44*
Legal Billing, ***Dec 195***
LetraPage, *Nov 85*
Liberty Spell-Checker, ***Jul 103 r;*** *Dec 206*
Life, *Dec 118*
Lightspeed Pascal, *Nov 91*
LISP. *See* ExperLisp; MacScheme
Locator Plus, *Dec 171*
LoDown hard disk, *Apr 87, Jun 102,* ***Sep 98 r;*** *Nov 89*
LoDown tape drives, *Sep 61*

M

MacADIOS, *Oct 136*
MacAdvantage: Mail Manager, ***Apr 125 r***
MacAdvantage UCSD Pascal editor/compiler, *Jun 75*
MacApollo, *Sep 125*
MacApp class library, *Nov 119, Dec 122*
Mac Art Department, *Dec 130*
Mac Art for Business, *Dec 130*
Mac Art Library, *Dec 130*
MacAtlas, *Dec 130*
MacAuthor, *Jul 73, Dec 44*
MacBack tape drives, *Sep 61*
MacBackup, *Mar 80, Aug 52*
MacBase, ***May 100 r***
MacBCool fan, *Jul 54*
MacBillboard, ***Nov 140 r***
MacBits, *Dec 130*
MacBuffer, ***Nov 135 r***
MacBuffer LW, *Nov 89*
MacCAD, *Sep 125*
MacCalc, *Sep 67,* ***Dec 148 r***
Maccelerator board, ***Aug 88 r;*** *Sep 125*
Maccessories: Graphic Accents, *Dec 130*
Maccessories Portable Modem, ***Sep 176 r***
MacChemistry, *Oct 136*
Mac Chopsticks, Vol. 1, *Dec 130*
MacControl, *Oct 136*
Maccountant, ***Sep 88***
MacDasher, *Jul 121*
MacDouble D-D, *Aug 57*
MacDraft, ***Jan 92 r;*** *Jun 50,* ***Nov 112 r***
creating forms with, *Jun 89*
MacDraw
clip art, *Dec 130*
creating forms with, *Jun 89*
custom patterns, *Apr 75*
dragging multiple objects, *Jan 151*
equations in, *Sep 192*
font bugs, *Sep 80*
part of custom graphics disk, *Mar 80*
pasting into MacPaint, *Jan 71*
pasting text into, *Jan 73, Jun 54*
printing large documents, *Jul 78*
scripts, creating with, *Apr 164*
smooth shapes, *Jul 165*
stretching text, *Sep 194*
MacFill-In, *Dec 48*
Mac535 disk drive, ***Nov 106 r***
MacGAS, ***Jul 103 r;*** *Dec 206*
MacGolf, ***Aug 144 r;*** *Dec 118*
update, *Nov 196*
MacGraphics, *Dec 130*
MacInker, ***Sep 162 r***
Macintalk, in VMCO, *Jun 25*
MacInTax, *Mar 87, Jul 56*
Macintosh Number-Cruncher, *Aug 88*
Macintosh Pascal
compiling with MacAdvantage, *Jun 75*
debugging tip, *Jan 157*
printing programs, *Apr 63*
recommended books on, *Mar 50*
version 2.0, *Jun 69*
Macintosh Plus, *Mar 57,* ***Apr 87 r***
attaching 800K drive to, *Jul 54*
pin assignments, *Nov 155*
software compatibility, *Apr 87, Aug 65*
Toolbox contents, new, *Nov 155*
upgrading from 128K, *Aug 47*
Macintosh Programmer's Workshop, *Oct 69,* ***Dec 122***
Macintosh team, profile, *Feb 133*
MacInTouch newsletter, *Apr 50*
MacKermit, *Jul 121*
MacKeymeleon, ***Sep 159 r***
MacLine, *Jul 121*
MacLink, *Dec 104*
MacMap, ***Nov 147 r***
MacMatbook, *Dec 130*
MacMate 20 hard disk, *Nov 89*
MacMegabytes memory upgrade, ***Feb 114 r;*** *Apr 80, 87, Jul 61*
MacMemories, *Dec 130*
MacMenlo, *Jul 121*
MacNifty Audio Digitizer, *Aug 124*
MacOneWrite, ***Sep 88***
MacOneWrite Cash Disbursements, ***Mar 123 r***
MacPaint
clip art, ***Dec 130***
copying large document, *Nov 166*
editing brushes, *Nov 151*
equilateral triangle, creating in, *Apr 75*
eraser tips, *Jul 168*
finding center of circle, *Apr 75*
flipping page horizontally, *Jan 58*
font 12, *Nov 151*
lasso tip, *Mar 167*
pasting into MacDraw or MacDraft, *Jan 70*
pasting into text documents, *Jan 70*
pasting text into, *Jan 73*
Print Catalog command, *Mar 72*
printing in high-quality mode, *Aug 66*
printing multiple copies, *May 182, Oct 182*

(continues)

Finally, The Drive That Matches Your Ambition.



To succeed in business, you bought an ambitious, hardworking Macintosh™ Plus. Now you need mass storage that can satisfy your need for speed and convenience. AST delivers the solution with two high-performance storage subsystems—the AST-2000™ and AST-4000™.

AST-2000 For 20 to 60 MB of High-Speed Storage. The AST-2000 SCSI subsystem eliminates the need for tedious floppy disk swapping so that you can spend more time accomplishing your goals and less time waiting. Our 20 MB disk drive with 20 MB tape backup provides the speed and storage to increase productivity in a wide range of business and personal applications, including data base management, word processing, spreadsheet analysis and desktop publishing. For additional storage, simply plug in an expansion unit with single or dual 20 MB hard disks.

We Make Apples Grow!

Fast and Easy Data Insurance. Archiving files and backing up information from disk drives is no longer a chore. In less than nine minutes the AST-2000 backs up 20 MB of data onto a single 20 MB tape cartridge.

AST-4000 for 74 to 370 MB of High-Speed Storage. The AST-4000 picks up where AST-2000 capacity ends with a 74 MB disk drive and 60 MB cartridge tape. And with its 30 millisecond average disk access time, 5 MB per minute tape transfer rate, SCSI interface and expandability to 370 MB, the AST-4000 provides unparalleled performance in single-user or multi-user AppleTalk™ network environments.

One Clear Choice—AST. Consider your alternatives: 1. Internal drives: if service is required, you must give up the use of your computer. 2. Floppy drives or drives connected to serial ports: painfully-low performance. 3. Plain wrap drives: don't include essential features, such as a tape backup. 4. Here today, gone tomorrow drives: offered by companies that have no history, or may soon be history.

No other disk and tape solution comes close to offering the same performance, features or product reliability as the AST-2000 and AST-4000.

AST Quality and Reliability. AST Research, Inc. has earned a worldwide reputation for reliable, high-quality products that ensure customer satisfaction. And every AST-2000 or AST-4000 subsystem comes with a six-month warranty.

For more information about the clear choice for data storage, contact your nearest AST-authorized Apple® Dealer or call the AST Apple Products Group at **(714) 553-0340.** BBS: (714) 660-9175. FAX: (714) 660-8063. AST Research, Inc., 2121 Alton Avenue, Irvine, California 92714-4992.

Yes, I want more information about AST's ultimate storage solutions for the Macintosh Plus.

☐ AST-2000 ☐ AST-4000

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____

AST Research, Inc. 2121 Alton Avenue, Irvine, CA 92714-4992
ATTN: Apple Products Group MW

AST RESEARCH INC.

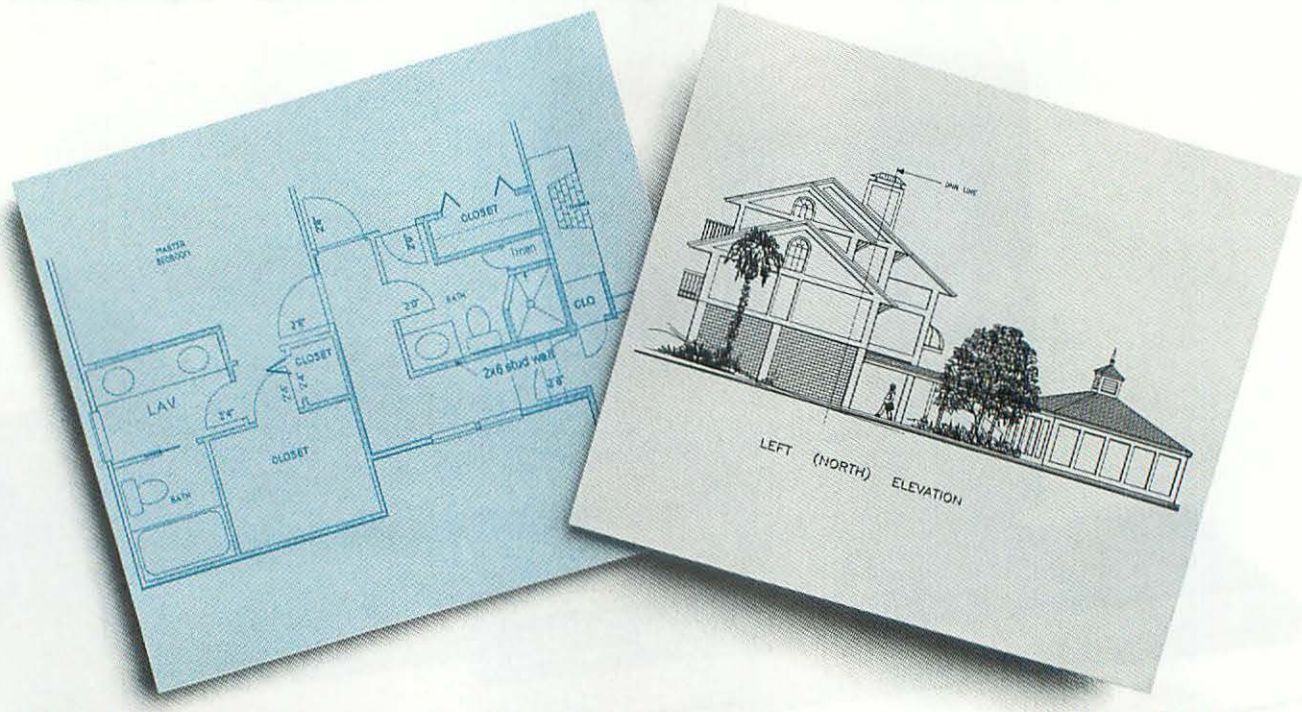
AST-2000, AST-4000 trademarks AST Research, Inc. Apple registered trademark, AppleTalk trademark of Apple Computer, Inc. Macintosh trademark of McIntosh Laboratory, Inc., licensed to Apple Computer, Inc., and used with the express permission of the owner. Copyright © 1986, AST Research, Inc. All rights reserved.

Circle 501 on reader service card

NOW SOLD WITH NO COPY PROTECTION

MacDraft 1.2

It keeps getting better.



Drawing Environment

Choose your scale and units and MacDraft will do the rest. Dimensions of objects, snap grids, rulers, cursor positions, area calculations and auto dimension lines will be computed for you.

New Features:

Resize groups & bit maps proportionally. Bit maps can also be stretched in an X, Y direction independently.

Cursor position indicator. Determines the relative position of an object on the drawing.

Hard disk install or de-install your copy of MacDraft.

New drawing scales. Choose from 32, including 2 new engineering scales; 4x & 10x, both in US and metric units.

Increased accuracy. Select from 1 to 4 places behind the decimal point. The values will be rounded off correctly.

Automatic area calculation of any object to scale regardless of complexity. Even trace the boundaries of overlapping objects to obtain net area.

Pict format allows you to save a drawing as well as open a document that has already been saved in this format. Transfer large drawings to a plotter driver that supports the format and conveniently use selected page layout programs.

64 Fill & ink patterns plus dynamically edit, create and save your custom patterns.

Plus:

Create circles by radius or diameter, arcs by radius or defining 3 points. For irregular shapes our polygon and freehand tools offer dynamic editing, auto closure and adding sides to an existing object. Zoom in and magnify a portion of your drawing up to 8x; or zoom out and see as much as 4′ x 4′ in a single window, maintaining full drawing capabilities at any view. Even rotate objects 1° at a time.

Don't Be Deceived

MacDraft is only $269.00, yet it offers the majority of drawing capabilities of CAD systems costing much more. It is the only drafting program that takes full advantage of the Macintosh user interface.

idd inc.

Innovative Data Design, Inc.
1975 Willow Pass Rd., Ste. 8
Concord, CA 94520
415/680-6818

Circle 308 on reader service card

MacPalette, ***Jul 113***
MacPerspective, ***Nov 142 r***
Mac + II transfer utility, *Mar 75*
MacPort SCSI Host Adapter, *Sep 65*
MacProject tips, ***Nov 189***
MacPublisher update, *Feb 61, Nov 85*
Macquisition, *Oct 136*
Macros
Excel date and time, *May 71*
Excel month end, *Jul 165*
Excel number crunching, *Oct 179*
Excel stock market quotations download, *Jul 126*
MacTerminal dialing directory, *May 112*
MacTracks, *Oct 182*
printing multiple MacPaint documents, *Oct 182*
Tempo, ***May 108 r; Jul 126,*** *Nov 196*
MacScheme, ***Dec 147 r***
MacServe, *Apr 87, Nov 168, Dec 104*
MacSpace, ***Jun 94 r;*** *Sep 44*
MacSpec, *Jul 73*
MacSpeech Lab, *Oct 136*
MacSpell+, ***Mar 125 r; Jul 103 r***
Mac Spell Right, ***Jul 103 r***
MacSpin, *Aug 97, Oct 136*
MacStore/AP with GL, ***Sep 88***
MacSuper20 hard disk, *Apr 87*
MacTep, *Jul 23*
MacTerminal, *Jan 63*
Answerback message, *Mar 70*
dialing directory macro, *May 112*
fixing backspace problem, *Feb 208*
hanging up too early, *Mar 67*
part of custom finance disk, *Mar 80*
saving last CompuServe screen in, *Jan 51*
shortcomings, *Jul 23*
terminal emulation, *Jul 121*
TTY emulation, *Jun 81*
MacTEX, *Nov 95*
Mac the Knife, Vol. 3, *Dec 130*
MacTools disk editor, *May 179*
MacTracks, *Oct 182*
Mac/2392, *Jul 121*
MacVideo Processor, *Sep 59,* ***Dec 146 r***
MacVision, *Mar 80*
MacWorkStation, *Jun 69*
MacWrite, *Dec 96*
boilerplate documents, saving, *Apr 163*
centering lines, *Mar 68*
changing default font, *Mar 70*
extra-narrow lines, *Mar 168*
filling out typewritten forms with, *Jul 83*
finding place in long document, *Mar 67*
footers, *Oct 91*
hard spaces, *Mar 68*
opening Word files with, *Jan 73*
vertical line spacing, *Jul 83*
MacZap, *Feb 44*
MagNet hard disks, *Apr 87,* ***Sep 98 r;*** *Nov 89*
Magnetic Arts clip art, *Dec 130*
MagNet Tandem 40, *Sep 61*
Magnum 800 disk drive, ***Nov 106 r***
Magnum Tape 20, *Sep 61*
Mail Manager, ***Apr 125 r***
Mainframes, communications with, ***Jul 121***
Market Pro, *Nov 95*
Matrix PCR, *Jul 95*
MAUG, Feb 82, *Jun 25*
The Max memory upgrade, ***Feb 114 r;*** *Jul 63*
MaxSave RAM disk, *Dec 91*
MaxThink, *Aug 61,* ***Sep 148 r***
Maze Wars+, *Nov 83*
MBASIC. *See* Microsoft BASIC
McCAD, *Sep 125*
McD 800 disk drive, ***Nov 106 r***
McPic!, *Dec 130*
MDC II, ***Nov 124,*** *Dec 206*
MegaForm, *Jun 89, Jul 83*
update, *Nov 196*
Megaroids, *Dec 118*
MegaScreen, *Sep 59, 125*
MegaTrack, *Feb 93, Sep 27,* ***172 r;*** *Dec 108*
Memory organization, *Apr 90*
Memory upgrades
commentary, *Oct 35*
DASCH RAM, ***Feb 146 r***
512K to Mac Plus, *Mar 57, Apr 87, Aug 65*
4-megabyte, *Aug 59*
128K to Mac Plus, *Mar 57, Aug 47*
overview, ***Feb 114***
Prodigy 4, *Aug 88*
SCSI adapters, *Sep 65*
tips for using 1 megabyte, ***Apr 80***
MGMStation, ***Nov 112 r***
MICAHDrive hard disk, *Apr 87*
Micah tape drive, *Sep 61*
Micro Conversions memory upgrade, ***Feb 114 r;*** *Apr 46*
MicroGrade, ***Nov 145 r***
MicroPhone, *Jul 23, 121,* ***133 r***
Micro Planner Plus, ***Oct 146 r***
Microsoft BASIC
Banner Maker, changing text orientation in, *Apr 166*
clearing fields and buttons, *Oct 179*
CLR libraries, ***Dec 149 r***
compared to True BASIC, *May 179*
creating text-only ThinkTank document, *Feb 204*
defining text fields, *Sep 77*
display time of day on menu bar, *Jun 178*
opening files in HFS, *Jun 83*
patterns program, *Jan 157*
PEEK to obtain disk names from memory, *May 182*
programming contest winners, *Jun 67*
saving graphics from Clipboard in, *Feb 87*
sideways text subroutine, *Apr 166*
Microsoft Chart, *Mar 80*
problem printing markers on LaserWriter, *Oct 184*
Microsoft Excel
commentary, *Apr 23*
data analysis, *Aug 80*
data-entry forms, ***Jun 116***
date and time macro, *May 71*
linking spreadsheets, *Sep 120*
macro tips, ***Jun 116, Sep 120***
month-end macro, *Jul 165*
number-crunching macros, *Oct 179*
Notes for Excel, *Jan 44*
part of custom finance disk, *Mar 80*
selecting print area, *Sep 120*
stock market quotes macro, ***Jul 126***
tips, ***Sep 120***
XY plotting in, *May 71*
Microsoft File
applications tips, *Aug 80*
as part of custom inventory disk, *Mar 80*
changing field types after data is entered, *Jun 175*
creating forms with, *Dec 48*
transferring data into Word, *Oct 182*
transferring pfs:file data to, *Apr 163*
Microsoft Flight Simulator, ***Aug 129 r,*** *Dec 118*
Microsoft Multiplan
automatic calculation in, *Feb 74*
in custom personal finance disk, *Mar 80*
removing password, *May 179*
tax templates, *Mar 87*
Microsoft Word
batch printing, *Jun 175, Oct 180*
bold text on Brother typewriter, *Sep 191*
centering lines, *Mar 68*
filling out typewritten forms with, *Jul 83*
finding place in long document, *Mar 67*
footnotes, *Oct 91*
formatting tips, ***Apr 112,*** *Oct 180*
formatting with Glossary, *Oct 180*
hard spaces, *Mar 68*
headers, *Jul 172*
merge printing without blanks, *Feb 196*
opening MacWrite files with, *Jan 73*
printing on Brother printers, *Dec 44*
restoring ThinkTank indentation in, *Feb 72*
speeding up printing, *May 179*
tiny text, *Jan 160*
transferring File data into, *Oct 182*
transferring pfs:file data to File with, *Apr 163, Jul 172*
update, *Jul 73*
version 3.0, ***Dec 96***
vertical line spacing, *Jul 83*
Microsoft Works, ***Oct 113 r***
pricing of, *Nov 67*
word processor, *Dec 96*

(continues)

Microtech 800K disk drive, ***Nov 106 r***
MIDI, ***Feb 93, Sep 27,*** *Dec 108. See also* Music
MIDI Composer, *Feb 93*
MIDI Conductor, *Sep 27*
MIDI Mac, *Feb 93, Sep 27*
MIDIMAC Patch Editor, *Sep 27*
MIDIMAC Sequencer, ***Dec 108***
MindSight, ***Apr 96 r,*** *Sep 52*
MindWrite, *Dec 96*
MiniCad, *Sep 125, Nov 112*
MiniFinder, ***Jan 82,*** *Oct 86, Nov 173*
bypassing, *Mar 167*
quitting to, *Sep 194*
using more icons in, *Jan 82*
Mirror Technologies 800K disk drive, ***Nov 106 r***
MockChart, *Mar 80*
MockPackage, *Mar 96*
MockTerminal, *Jan 63*
MockWrite, *Mar 80*
Model 100, printing files on ImageWriter, *May 183*
Modems. *See* Communications
MoneyLink, *Apr 55*
Monitors
The Big Picture, *Nov 89*
Chromatron, *Feb 57, Jul 62*
MacVideo Processor, *Sep 59*
MegaScreen, *Sep 59*
Mentauris adapter, *Sep 59*
Radius Full Page Display, *Oct 67*
SuperChroma, *Jul 65*
VMI color monitor, *Sep 125, Nov 100*
MonsterMac memory upgrade, ***Feb 114 r***
More, ***Sep 112 r***
pricing of, *Nov 67*
Mouse
feet protection, *Feb 208, Mar 75*
Mouse Exchange BBS, ***May 160 r***
Mouse Mover, *Mar 75*
MPW, *Oct 69,* ***Dec 122***
Multiplan. *See* Microsoft Multiplan
Multi-Scrap DA, *Jan 68, Mar 80, Dec 134*
Multiuser applications. *See* Networks
MultiWrite, *Jul 73*
Music, ***Feb 93, 109, Sep 27, Dec 108***
ConcertWare+, *Sep 27*
ConcertWare+MIDI, *Feb 93, Dec 108*
Deluxe Music Construction Set, *Feb 93,* ***109 r,*** *Apr 44,* ***Dec 108***
font, *Dec 108*
High Score, *Nov 81,* ***Dec 108***
MacNifty Audio Digitizer, *Aug 124*
MegaTrack, *Feb 93, Sep 27,* ***172 r,*** *Dec 108*
MIDI, ***Feb 93, Sep 27,*** *Dec 108, 140*
MIDI Composer, *Feb 93*
MIDI Conductor, *Sep 27*
MIDI Mac, *Feb 93, Sep 27*
MIDIMAC Patch Editor, *Sep 27*
MIDIMAC Sequencer, ***Dec 108***
MusicWorks, Feb 93, *Dec 108*
notation, Feb 109, *Dec 108*
Patch Librarian, *Sep 27*
Performer, ***Dec 108, 140 r***
Professional Composer, *Feb 93,* ***109 r; Dec 108***
Sound Designer, *Aug 124, Nov 52*
SpaceGuide, *Nov 81*
StudioMac, *Feb 93*
Studio Session, *Aug 124, Dec 108*
Total Music, *Feb 93, Dec 108*
Universe of Sounds CD ROM disk, *Jun 71*
MusicWorks, *Feb 93, Dec 108*
myDiskLabeler, ***Aug 135 r***
My Office, ***Feb 143 r,*** *Sep 37*

N

Neon, *Nov 119*
Netway 1000, *Jul 121*
Networks, ***Jun 126, Oct 104***
AppleTalk Network Server, *Jun 126*
commentary, *May 25*
FastPath, *June 126, Dec 104*
HyperNet, *Jun 126,* ***Oct 104 r***
InterBridge, *Jun 126, Nov 168*
Keeper file server, *Jun 126*
MacServe, *Jun 126,* ***Oct 104 r,*** *Nov 168, Dec 104*
Omninet, *June 126*
PhoneNet, *Sep 63*
Sun Net, *Jun 126*
3Server, *Jun 126*
TOPS, *Apr 87, Jun 126,* ***Oct 104 r,*** *Nov 168, Dec 104*
Ultra-Office, *Jun 126, Dec 104*
UNIX, *Jun 126*
Northern Telecom/Apple agreement, *Apr 59*
Not Enough Memory message, *Oct 82*
Notepad, *Dec 104*
Notes for Excel, *Jan 44*
Notes for Jazz, *Jan 44*
Novy Floating Point Accelerator, ***Aug 88 r,*** *Sep 125*
NTSC video, *Sep 59,* ***Dec 146 r***

O

Object-oriented languages, ***Nov 119,*** *Dec 122*
Object Pascal, *Nov 119*
OCRs. *See* Optical character readers
ODS Consultant, ***May 138 r***
Omnis 3, ***May 100 r,*** *Aug 80*
developer conference, *Dec 89*
One on One, ***Sep 178 r***
On-line services
CompuServe, *Feb 82, Jun 25, Jul 71, 126*
GEnie, *Aug 57,* ***Nov 141 r***
Portal, *Oct 71*
Open for Business, ***Sep 88***
Operating system, Macintosh. *See* System
Optical character readers
Abaton, *Jul 80*
Knowledge Engineering, *Jul 80*
Omni-Reader, *Jul 80*
SpectraFAX, *Apr 87, Jul 80*
Optical disks, *Feb 100*
Orbiter, ***Sep 164 r***
Outline processors
Acta, *Aug 61,* ***Oct 150 r***
Calliope, *Aug 61*
MaxThink, *Aug 61,* ***Sep 148 r***
More, ***Sep 112 r,*** *Nov 67*
ThinkTank
creating indented text document with MBASIC, *Feb 204*
512, as project management tool, ***Apr 106***
retaining indentation in Word, *Feb 72*
OverVue 2.0, *May 103, Aug 80*
TurboCharger compatibility, *Aug 47*

P

Packer, ***Aug 142 r***
PacPaint, ***Aug 142 r***
Paint Cutter, *Jan 58, 71, Nov 166*
Palantir Financial Series, ***Sep 88***
Patch Librarian, *Sep 27*
PCB design, *Sep 125,* ***Dec 150 r*** *(Quik Circuit)*
pcLink, *Jul 121*
PC MacBridge, *Jun 126*
PC MacKey keyboard, *Jun 83*
PC MacServe, *Dec 104*
Performer, ***Dec 108, 140 r***
Personal Accountant, ***Sep 88***
Personal software. *See* Home/personal software
pfs:file, transferring data to Microsoft File, *Apr 163, Jul 172*
Phaser 800 disk drive, ***Nov 106 r***
PhoneNet, *Sep 63*
PictureBase, ***Jul 151 r,*** *Dec 134*
P.K.I. 800K disk drive, ***Nov 106 r***
Plains and Simple, ***Sep 88***
Plotters/plotter drivers, ***Oct 96***
MacPlot, *Jan 95,* ***Oct 96***
MacPlots II, *Jan 95,* ***Oct 96***
Plot-It, ***Oct 96***
Plotstart, ***Oct 96***
Portal, *Oct 71*
PosterMaker, ***Nov 140 r***
PostScript
Atlas PostScript Controller, *Dec 89*
graphics, *Nov 91, Dec 89*
PressLink, *Nov 83*
Print Catalog command, *Mar 72*
Printers/printing. *See also* ImageWriter; ImageWriter II; LaserWriter
Brother typewriter, printing bold on, *Sep 191*
cables, *Jan 54*
Chooser, *Nov 173*
User Name item, *Nov 154*
Clean Image head cleaner, *Nov 186*
ColorChart, ***Oct 152 r***

(continues)

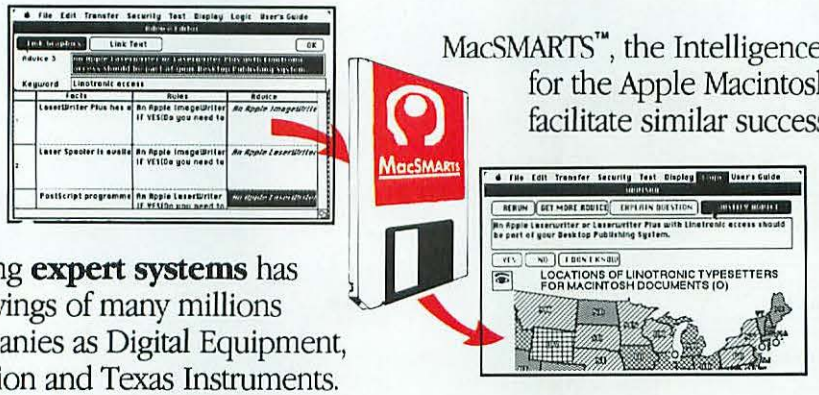
Knowledge + Inference = Intelligence

Step-By-Step Tutorial And Examples Included

MacSMARTS™

The Intelligence-Amplifying Software™

Knowledge is a strategic resource of individuals and of corporations. Properly managed the impact can be tremendous. The substantial investment in developing **expert systems** has paid off in corporate savings of many millions of dollars to such companies as Digital Equipment, Westinghouse Corporation and Texas Instruments.



MacSMARTS™, the Intelligence-Amplifying Software for the Apple Macintosh, was designed to facilitate similar successes in a wide range of businesses and professions using the new knowledge management techniques but with a much reduced investment.

EASY TO USE

The innovative Logic Worksheet of MacSMARTS is laid out like a spreadsheet, with columns for FACTS, RULES and ADVICE. In its operations, users of Excel, Jazz or other Macintosh spreadsheet processors will feel quite at home. You don't need to master a complex syntax just to get started. And with the click of a mouse and a menu selection you can link graphics and text to rules and advice to elaborate and inform with geological maps, engine diagrams, or architectural plans; key contract paragraphs, laboratory protocols or balance sheets.

PRODUCTIVE

By making it easy to construct a knowledge base—consisting of facts, rules and examples—in the Logic Worksheet you can use deductive and inductive inferencing techniques to diagnose and advise, design, plan or trouble-shoot.

Some typical applications include:

- **A partner in a major law firm** is using MacSMARTS to advise a junior associate on the finer points of corporate law.
- **A real estate developer** used a MacSMARTS program to make certain no considerations were missed in the decision to build a new office complex.
- **A medical laboratory director** found that a MacSMARTS program could assist new technicians in performing diagnostic tests.
- **A marketing director** will use a MacSMARTS program to configure the best components to meet a customer's requirements.
- **A financial consultant** saw that a MacSMARTS program could assist him in strategic portfolio planning for more clients.
- **An MIS director** uses a MacSMARTS program to assist programmers to track down problems in systems software.
- **A doctor** is using a MacSMARTS program to aalyze the implications of tests on his visually-impaired patients.
- The possibilities are bounded only by logic and human imagination. Our customer base spans two continents and a wide range of professions and businesses from individual consultants to the Fortune 500.

Technical Specifications and Features

- Prolog Inference engine
- Integrates both logical rules and examples
- Up to 4000 rules per knowledge base
- Up to 1000 examples per schematic rule
- Linkage of multiple knowledge bases
- Editor for easy revision of knowledge bases
- Context-sensitive help screens available at all times
- Import/export gateways
- Modular compilation of knowledge bases
- Password protection of sensitive knowledge
- Query-the-user facility linked to text and graphics files
- Works on hard disks for faster operation
- Compatible with HFS and the Macintosh Plus

AFFORDABLE

Artificial intelligence is one of the most significant developments in the history of computer technology. Now you can access the power of this new technology and put it to work with MacSMARTS. MacSMARTS has the features of programs costing hundreds or even thousands of dollars more yet costs only $149.95. As a limited introductory offer order MacSMARTS direct risk-free now for only $99.95. A small price to put you ahead of the competition and into the 21st Century. If MacSMARTS does not boost your personal productivity over the first 60 days, send it back for a full refund—no questions asked. We guarantee your satisfaction!

Meet us in San Francisco at MacWorld Expo Booth #843

Cognition Technology™

55 Wheeler Street, Cambridge, MA 02138

YES, I want to innovate today. Please send me MacSMARTS™!

MacSMARTS Not Copy-Protected Quantity: ____ @ **$99.95** = ____

MA res. add $5.00 sales tax per copy = ____

Shipping and Handling — Canada $ 5.00 per copy = ____ — Other Countries $10.00 per copy = ____

60-Day Money-Back Guarantee

Payment: ☐ Check ☐ Money Order ☐ MC ☐ VISA

Total Amount = ____

To order by Credit Card call toll-free (800) 255-5550, Ext. 354

Credit Card Expiration Date ____/____

Card # |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

Name _____ Signature _____

Title _____ Company _____

Shipping Address: _____

City: _____ State: ____ Zip: ____

Telephone: _____

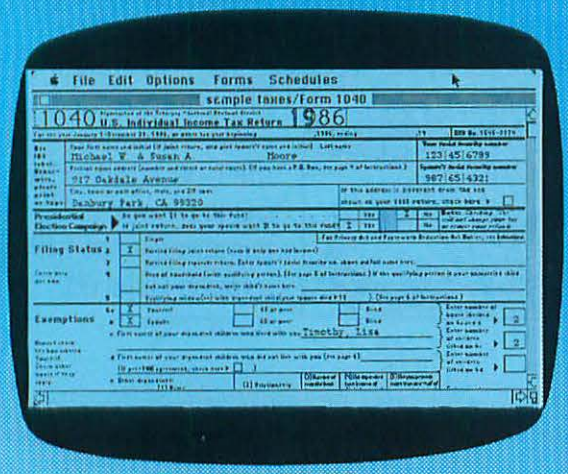
CODs and Purchase Orders WILL NOT be accepted. **For the 512K Mac, MacXL and Macintosh Plus.**

Copyright ©1986 Cognition Technology Corporation
Apple is a registered trademark of; and Macintosh is a trademark licensed to Apple Computer, Inc. Jazz is a trademark of Lotus Development Corporation. MacSMARTS, the MacSMARTS icon, the Cognition Technology logo and Intelligence Amplifying Software are trademarks of Cognition Technology Corporation, 55 Wheeler Street, Cambridge, MA 02138, (617) 492-0246.

Circle 619 on reader service card

MacInTax™

THE INCOME TAX PROGRAM



"The best of the crop is MacInTax . . ."
MacUser, January 1986

"I give MacInTax my highest recommendation."
MacWorld, March 1986

". . . our personal favorite: MacInTax"
InfoWorld, March 3, 1986

"SoftView's MacInTax is wonderful . . ."
Jerry Pournelle, Columnist, **Byte**, August, 1986

TOP-RATED TAX PROGRAM:

- DISPLAYS EXACT FORM ON SCREEN
- PERFORMS TAX CALCULATIONS AUTOMATICALLY
- LINKS ALL FORMS AND SCHEDULES AUTOMATICALLY
- DISPLAYS AND LINKS WORKSHEETS AND ITEMIZATION WINDOWS
- DISPLAYS COMPLETE IRS INSTRUCTIONS ON SCREEN
- PRINTS ENTIRE FORM WITH ALL DATA — FULLY IRS APPROVED FOR SIGNATURE AND SUBMISSION
- ALLOWS ESTIMATES FOR TAX PLANNING AND "WHAT IF" PROJECTIONS
- INTERFACES DIRECTLY TO SPREADSHEETS, DATA BASES, ACCOUNTING PROGRAMS
- OPERATES ON ALL MACINTOSHES, ONLY REQUIRES ONE DISK DRIVE. MacInTax FEDERAL CONTAINS 26 FORMS AND SCHEDULES. MacInTax CALIFORNIA CONTAINS 15 FORMS AND SCHEDULES.

SOFT VIEW

SOFTVIEW®

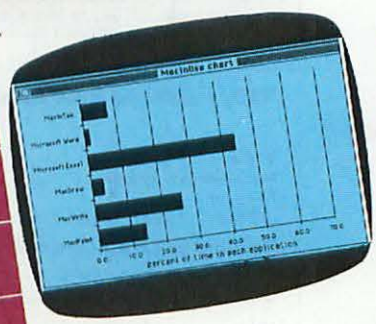
MacInTax FEDERAL: $99.00
(Yearly updates: $45.00)
MacInTax CALIFORNIA: $45.00
(Yearly updates: $25.00)
MacInUse: $49.00

To order call: 1-800-MACNTAX (Outside California)
1-800-MACVIEW (within California)

MacInTax AND MacInUse ARE TRADEMARKS OF SOFTVIEW, INC. MACINTOSH AND MACWRITE ARE TRADEMARKS OF APPLE COMPUTER, INC. MULTIPLAN, EXCEL AND MS WORD ARE TRADEMARKS OF MICROSOFT CORP.

INTRODUCING

MacInUse™



FIND OUT WHAT YOUR MAC IS DOING!

- AUTOMATICALLY RECORDS EACH APPLICATION USED — NAME, DATE, START TIME, DURATION, AND OPTIONAL COMMENT.
- MAINTAINS USAGE INFORMATION IN A "TEXT" FILE — EASILY EXPORTED TO OTHER APPLICATIONS.
- INCLUDES TEMPLATES AND MACROS FOR MACWRITE,™ MS WORD,™ MULTIPLAN,™ AND EXCEL.™

MacInUse – WHO NEEDS IT?

- PEOPLE WORKING AT HOME — FOR CONTEMPORANEOUS TAX RECORDS.
- CONSULTANTS — FOR CLIENT BILLING RECORDS.
- MANAGERS — FOR EMPLOYEE PRODUCTIVITY AND RESOURCE TRACKING.

THE MACINTOSH TRACKER

TRACKS THE USAGE OF YOUR MAC

Circle 454 on reader service card.

Printers/printing (continued)
ColorMate, ***Jan 113 r, Jul 113***
ColorPress, *Jul 113,* ***Dec 141 r***
ColorPrint, ***Jul 113***
color printing, *Jan 90, 113, Jul 95,* ***113***
custom paper sizes, creating, *Jan 58, Jul 77*
envelopes, printing, *Oct 82*
Epson, connecting to Mac, *Mar 167*
FastPrint, *Oct 182*
graphics printing tips, *Jan 71*
LaserJet, ***Mar 148 r,*** *Sep 44*
MacInker, ***Sep 162 r***
MacPalette, ***Jul 113***
merge printing without blanks in Word, *Feb 196*
mimeograph masters, making, *Feb 208*
pin-feed disk labels, *May 78*
Pinwriter CP2 printer, ***Jan 113 r***
print spooling, *Sep 37, Nov 36, 89, 135*
ribbon cartridge refills, *Sep 162*
Silicon Press, *Jul 113*
ProApp hard disks, ***Sep 98 r,*** *Nov 89*
Prodigy 4, ***Aug 88 r,*** *Sep 125*
Professional CAD for the Mac, *Sep 125*
Professional Composer, *Feb 93,* ***109 r; Dec 108***
Programming. *See also* Macintosh Pascal; Microsoft BASIC
CLR libraries, Microsoft BASIC, ***Dec 149 r***
ExperCommonLISP, *Nov 119*
ExperLisp, ***Mar 99 r***
LightspeedC, ***Oct 119 r***
Lightspeed Pascal, *Nov 91*
MacApp class library, *Nov 119, Dec 122*
Macintosh Programmer's Workshop, *Oct 69,* ***Dec 122***
MacScheme, ***Dec 147 r***
Microsoft FORTRAN, ***Jun 110 r,*** *Oct 50*
Microsoft Logo, ***Jan 144 r***
Model 100 printing program, *May 183*
Neon, *Nov 119*
object-oriented languages, ***Nov 119,*** *Dec 122*
Show and Tell language, *Apr 53*
Smalltalk, *Nov 119*
Software Entrepreneur's Forum, *May 67, Aug 112*
True BASIC, *May 179,* ***Nov 143 r***
Project management, *Apr 106*
MacProject tips, ***Nov 189***
Micro Planner Plus, ***Oct 146 r***
ProModem 1200, ***Apr 129 r,*** *Nov 36*
PS Compose, *Oct 75*
Public Domain Exchange (SoftCore), *Aug 100*
Public domain/shareware, ***Aug 100,*** *117*
Artisto, *Nov 166*
Backgammon, *Aug 117*
Bagels, ***Aug 100 r***
Billiard Parlour, ***Aug 100 r***
Core War, *May 69*
CrashFix, *Oct 79*
DiskInfo, *May 74,* ***Nov 124***
Disk Librarian, ***Nov 124***
Extras, *Jan 68, Mar 80, May 74*
Fedit, *Jun 75, 78, Nov 158, Dec 171*
File Converter, *Nov 166*
FKey Installer, ***Aug 100 r***
FreeTerm, *Jan 63, Mar 68,* ***Aug 100 r***
KnockOut, ***Aug 100 r***
Megaroids, *Dec 118*
MockChart, *Mar 80*
MockPackage, *Mar 96*
MockWrite, *Mar 80*
MockTerminal, *Jan 63*
Multi-Scrap, *Jan 68, Mar 80, Dec 134*
PaintMover, ***Aug 100 r***
RamStart, *Apr 80,* ***Aug 100 r,*** *Oct 79*
Red Ryder, *Apr 50, Jul 23, 121, 126; Aug 117*
Screen Maker, *Nov 173*
Talking Alarm Clock, *Nov 155*
3D Tic-Tac-Toe, ***Aug 100 r***
Transfer, *Apr 80,* ***Aug 100 r***
Wator, *May 69*
Waystation, ***Aug 100 r***
where to obtain, *Jun 75*
Window Changer, *Sep 191*
Publish! magazine insert, *Jul*

Q

Quick and Dirty Utilities Vol. One, ***Feb 166 r,*** *Mar 80*
QuickPaint, *Jan 71, Mar 80, Nov 166, Dec 134*
Quik Circuit, *Sep 125,* ***Dec 150 r***

R

Radio Shack Model 100, printing files on ImageWriter, *May 183*
Radius Full Page Display, *Oct 67*
Rags to Riches, ***Sep 88***
Rags to Riches Professional Billing, ***Dec 195***
Ragtime, *Nov 87*
RAM disks, *Apr 80, Dec 91*
ReadySetGo updates, *Feb 61, Nov 93*
Record Holder, *Aug 80,* ***Sep 136 r***
Red Ryder, *Apr 50, Jul 23, 121, 126, Aug 117*
ResEdit, *Jan 58*
adding icons to menus, *Aug 74*
changing date format in System file, *Sep 72*
creating custom paper sizes with, *Jul 77*
creating custom patterns in MacDraw, *Apr 75*
creating fractions with, *Jul 83*
editing MacPaint's font 12, *Nov 151*
identifying laser fonts in menu, *Nov 162*
making files invisible, *Jun 78*
resizing and repositioning windows, *Feb 195, Jun 49*
where to get, *Aug 75*
Ribbons, reinking, *Sep 162*
The Right Word, ***Jul 103 r***
Robot, Macintosh-controlled, *Aug 55*
Runtime Helix, *Mar 61*

S

SANE, *Aug 91*
Sargon III, *Dec 118*
Scanners. *See* Digitizers/scanners
Schema, *Dec 85*
Scientific applications of Mac, *Oct 136*
Scrapbook, *Jan 68*
throwing away, *Nov 173*
Screen Maker, *Nov 173*
Screens. *See* Monitors
Scripts, creating with MacDraw, *Apr 164*
SCSI, *Apr 87*
adapters, *Sep 65*
hard disks, *Jun 102,* ***Sep 98, Dec 143 r***
peripherals, *Apr 87, Jun 102*
port, *Mar 57*
tape drives, *Sep 61*
Servant, *Oct 65*
SetFile DA, *May 87*
Shareware. *See* Public domain/shareware
ShopKeeper, ***Sep 88***
Sidekick, ***Mar 106 r***
Sierra Championship Boxing, ***Feb 153 r,*** *Dec 118*
Silicon Beach Software, profile, *Apr 116*
Silicon Press, *Jul 113*
SkipFinder DA, *Mar 80*
Sky Bytes, *Dec 130*
Slides, *Jul 63, 95*
Slide Show Magician, *Aug 124,* ***132 r,*** *Dec 39*
Smalltalk, *Nov 119*
Smart Alarms, *Nov 155,* ***Dec 145 r***
problem with Tempo, *Dec 44*
Smartcom II, *Jul 23, 121*
Smart Eyes, ***Oct 163 r***
SmArt Mouse, *Dec 130*
Soft Palette clip art, *Dec 130*
Softstrip Reader, *Feb 59,* ***Oct 164 r***
Software
development, *Aug 112*
pricing, *Nov 67*
rental, *Sep 13*
support, *Jul 15, 35*
Software Supplements, Apple, *Aug 75*
Sonata font, *Dec 108*
Sound, digitized, ***Aug 124***
in games, *Apr 116*
MacSpeech Lab, *Oct 136*
MIDIMAC Patch Editor, *Sep 27*
Patch Librarian, *Sep 27*
SoundCap, *Aug 124*
Sound Designer, *Aug 124, Nov 52*
SpaceGuide, *Nov 81*
SpectraFAX Scanner, *Apr 87*
Spelling checkers
Hayden:Speller, ***Jan 131 r; Jul 103 r***
Liberty Spell-Checker, ***Jul 103 r,*** *Dec 206*
MacGAS, ***Jul 103 r,*** *Dec 206*

(continues)

Spelling checkers (continued)
MacLightning, ***Jul 103 r***
MacSpell +, ***Mar 125 r, Jul 103 r***
Mac Spell Right, ***Jul 103 r***
The Right Word, ***Jul 103 r***
Spellswell, ***Jul 103 r***
Spellswell, ***Jul 103 r***
Spreadsheets. *See also* Executive Office; Microsoft Excel; Microsoft Multiplan
ClickOn Worksheet, *Mar 80*
creating columnar tables with, *Jan 154, May 82*
Crunch, *Aug 80*
MacCalc, *Sep 67,* ***Dec 148 r***
Trapeze, *Nov 85*
Start-up disk, *Nov 173*
Start-up screen, creating, *Nov 173*
Stat80, ***Nov 109 r***
Statistics, *Oct 136*
MacSpin, *Aug 97*
Stat80, ***Nov 109 r***
StatView 512, ***Dec 138 r***
StatWorks update, *Dec 206*
StatView 512, ***Dec 138 r***
StatWorks update, *Dec 206*
STELLA, ***Sep 109 r,*** *Oct 136*
Stock market analysis software, *Nov 95*
Excel stock market quotations download macro, *Jul 126*
Straight Talk, *Jul 121*
Strategic Conquest, multiuser, *Nov 83*
Strictly Business, ***Sep 88***
Studio Session, *Aug 124, Dec 108*
Sunpas, *Sep 125*
Sun Safe-60 tape drive, *Sep 61*
SunShine Graphics Library, *Dec 130*
Sun Talk, *Apr 87*
SuperChroma, *Jul 65*
Super Note Pad, *Mar 80*
SuperPaint, ***Nov 133 r***
Surgery simulations, *Jun 67*
System, ***Nov 173.*** *See also* HFS
Alarm Clock, *May 78*
Chooser, *Nov 173*
User Name item, *Nov 154*
Clipboard, *Jan 68, Feb 82, Nov 173, Dec 104*
saving graphics from in MBASIC, *Feb 87*
date format, changing, *Sep 72*
ejecting disks, *Nov 151*
error ID codes, *Sep 83*
Finder, *Jan 81, Mar 57, May 93, Nov 93*
folders, caveat when copying, *Feb 77*
Font/DA Mover, *Nov 173*
assigning fonts to single application, *Jun 175*
Option-key features, *Jun 176*
initializing disk, space used by, *Sep 71*
locked files, throwing away, *Mar 167*
long document names, displaying, *Sep 191*
Macintosh Plus, *Mar 57,* ***Apr 87 r***
MiniFinder, ***Jan 82,*** *Oct 86, Nov 173*
bypassing, *Mar 167*
quitting to, *Sep 194*
using more icons in, *Jan 82*
Print Catalog, *Mar 72, Apr 63*
Sad Mac icon, explanation of error codes, *Apr 68*
Scrapbook, *Jan 68, Dec 104*
throwing away, *Nov 173*
Set Startup command, *Sep 71*
start-up disk, *Nov 173*
start-up screen, creating, *Nov 173*
System file, *Nov 173*
version numbers, *Nov 93*
System Folder, tour of, ***Nov 173***
temporary files, *Nov 158*
Trash can shortcut, *Jun 180*
undo start-up application, *Sep 71*

T

Talking Alarm Clock, *Nov 155*
Tandy 200, connecting to Mac, *Jul 168*
Tape drives, *Sep 61*
Taxes, preparing forms on Mac, *Mar 87*
Tax Master, *Mar 87*
TaxPlan, *Mar 87*
Tax-Prep, *Mar 87*
Tax Wizard, *Mar 87*
Technical materials, where to get, *Aug 75, Nov 155*
Tekalike, *Jul 121, Sep 40*
Telecommunications. *See* Communications
Telescape, *Jul 121*
Tempest Macintosh, *Dec 91*
Tempo, ***May 108 r***
stock market quotes macro for Excel, ***Jul 126***
update, *Nov 196*
Temporary files, *Nov 158*
Terminal emulation software, ***Jul 121***
Theatergame courseware, *Mar 61*
ThinkTank
creating indented text document with MBASIC, *Feb 204*
512, as project management tool, ***Apr 106***
retaining indentation in Word, *Feb 72*
3Server Expansion Disk, *Apr 87*
ThunderScan, *Mar 80, Nov 100*
fix for horizontal shrinkage, *Dec 44*
use in font design, *Feb 126*
TimeBase, ***Jun 150 r***
Timecard, ***Sep 88***
TopDesk, ***Jun 137 r***
update, *Nov 196*
TOPS, *Apr 87, Nov 168, Dec 104*
Total Music, *Feb 93, Dec 108*
The Toy Shop, ***Dec 152 r***
Transfer DA, *Apr 80,* ***Aug 100 r***
Trapeze, *Nov 85*
Trash can shortcut, *Jun 180*
True BASIC, *May 179,* ***Nov 143 r***
TurboDownload, ***Nov 145 r***
Turbo Maccountant, ***Sep 88, Oct 156 r***
update, *Nov 196*
TV, displaying Mac screen on, *Sep 59,* ***Dec 146 r***
Typefaces. *See* Fonts
Typesetting, *May 31, Oct 75, Nov 95, 151*

U

Ultra-Office, *Jun 126, Dec 104*
Uninvited, ***Sep 159 r***
Universe of Sounds, *Aug 124*
UNIX, *Jun 129*
Upgrades. *See* Memory upgrades
User groups, Apple involvement with, *Jul 71*
Utilities. *See also* Fedit; ResEdit
backup, *Mar 80, Apr 80, May 148, Nov 124*
Copy II Mac, *Mar 80, Aug 52*
CrashFix, *Oct 79*
DiskInfo, *May 74,* ***Nov 124***
Disk Librarian, ***Nov 124***
Disk Ranger, ***Nov 124***
Extras, *Jan 68, Mar 80*
FastPrint, *Oct 182*
Flashback, ***Nov 124***
hard disk, ***Nov 124***
Hard Disk Util, *Apr 80,* ***May 148 r***
HD Backup, ***Nov 124***
HFS Backup, ***Nov 124***
HFS Locator, *Sep 52,* ***Nov 124***
MacBackup, *Mar 80, Aug 52*
Mac Disk Catalog, *Apr 63*
Macintosh Software Supplement, *Jan 58*
MacLabeler, *Apr 63*
MacTools, *Oct 130*
MacZap, *Feb 44*
MDC II, ***Nov 124,*** *Dec 206*
Multi-Scrap, *Jan 68, Dec 134*
Packer, ***Aug 142 r***
PacPaint, ***Aug 142 r***
Quick and Dirty Utilities Vol. One, ***Feb 166 r***
RamStart, *Apr 80,* ***Aug 100 r,*** *Oct 79*
REdit, creating custom paper sizes with, *Jan 58*
Servant, *Oct 65*
SetFile, *May 87*
Switcher, *Jan 70*
using with 1-megabyte Mac, *Apr 80*
Tempo, ***May 108 r, Jul 126,*** *Nov 196*
TurboCharger, *Apr 80*
where to get, *Aug 75*

V

VCO +, *Oct 71*
Versa Series accounting, ***Sep 88***
VersaTerm, *Jul 12*
Version numbers, *Nov 173*
Finder and System, *Nov 93*
updates, *Nov 196*

(continues)



See Us at Macworld Expo Booth #1102

EAGLES DON'T FLOCK

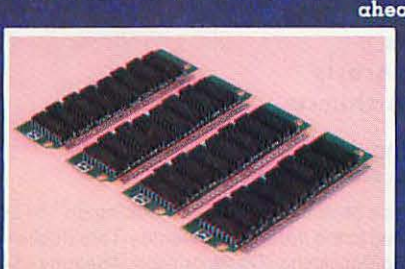
They stand alone. So does MacSnap Plus 4 from DOVE COMPUTER. MacSnap Plus 4 utilizes 'state-of-the-art' 1 Megabit chips to give the Macintosh Plus user a full four megabytes of contiguous RAM, **NOW**! And with our performance software package you can work up to 60% faster. MacSnap Plus 4 offers maximum memory enhancement and productivity for the corporate, business or professional user. And MacSnap Plus 4 actually lowers the Mac's power draw, so you can have peace of mind. Less heat. More memory. NO fan required.

Of course the Plus 4 is fully compatible with the Macintosh's operating system and all system software, but it doesn't stop there. It is also compatible with HyperDrive and other internal hard disks. And it comes complete with its own performance software package that includes a user-configurable RAMdisk, Apple Switcher and a print spooler. Now you can run those normally slow programs like Excel, Jazz and Pagemaker at lightning speed. Or manage them simultaneously with only a single disk drive. The ideal desktop publishing companion, our print spooler allows you to print one document while working on another. And with all that extra speed and memory, deadline worries are a thing of the past.

If you're not ready for 4 Megs you can start with 2 Megs and expand later. DOVE offers you a choice of 2 Meg products designed to double the memory and increase the performance of your Plus. MacSnap Plus 2 is perfect for the business or personal Plus user who has no need for further memory expansion. MacSnap Plus 2 provides a full 2 Megs of contiguous memory with the same speed and productivity benefits as the Plus 4, but in a very cost effective package. For greater versatility and expandability, try MacSnap Plus 2H. The Plus 2H uses 1 Megabit chips and SIMM technology to give you 2-2.5 Megs. And you have the option to expand the Plus 2H to 4.0 Megs as your needs change. MacSnap Plus 2H is completely compatible with HyperDrive and other internal hard disks.

DOVE's Plus products offer you top quality, performance and a choice based on your needs. All supported with complete user documentation and DOVE's full warranty and product guarantee.

Don't wait. Call us for the name of your local DOVE dealer. Or visit your dealer and ask for our products. Go ahead. Soar like an eagle – with MacSnap Plus.



Productivity Enhancement Products

DOVE
COMPUTER CORPORATION
1200 North 23rd St. □ Wilmington, N.C. 28405

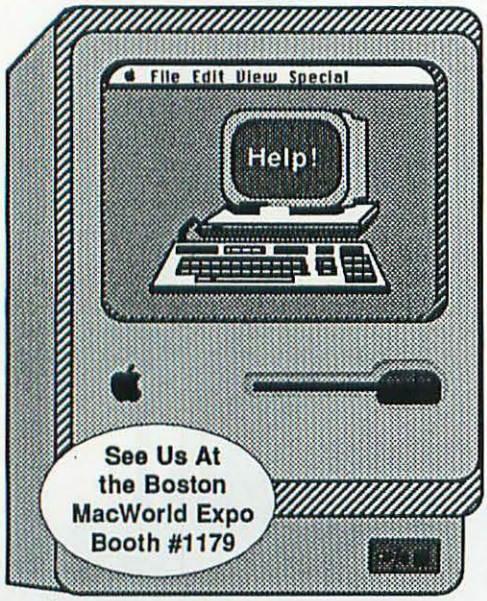
1-800-MAC-SNAP
In NC, call (919) 763-7918

Macintosh is a trademark licensed to Apple Computer Inc. Switcher, EXCEL, JAZZ and HyperDrive are registered trademarks of Apple Computer Inc., Microsoft, Inc., Lotus Development Corp., Inc., and General Computer Corp., respectively. MacSnap, MacSnap 2 and MacSnap + are registered trademarks of Dove Computer Corp.

Circle 498 on reader service card

There's A DEC™ Graphics Terminal Trapped Inside Your Macintosh™

Release it with Mac 240™



- VT100/220/240 compatible
- ReGIS graphics
- Function key emulation
- File transfer
- Autodialing
- Copy text and graphics
- Printing

$199 postpaid

CALL TODAY
(603)673-8151

WHITE PINE SOFTWARE
75 Rte. 101A, PO Box 1108
Amherst, NH 03031

™DEC & VT are trademarks of Digital Equipment Corp., Macintosh is a trademark licensed to Apple Computer, Inc.

Circle 538 on reader service card

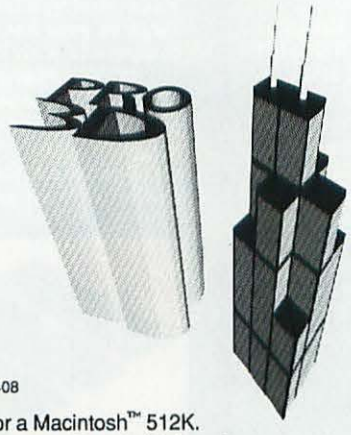
The Creators of Easy3D™ Present

PRO 3D™



The solution for designing and presenting:

• Products • Models • Ideas
• Camera Ready Art



See Us At Booth #1309 San Francisco Expo

The Professional Shaded Modeling Program For • Engineers • Desktop Publishers • Artists • Graphic Designers • Architects

Enabling Technologies, Inc.
600 South Dearborn, Suite 1304, Chicago, Illinois 60605 312/427-0408

Pro3D/Mac is $349 and requires a Macintosh Plus™ or a Macintosh™ 512K.
Pro3D and Easy3D are distributed to the trade by the Ashton-Tate Publishing Group.
3D Clip Object Disks - Desktop Publishing, Transportation, Anatomy - $49.95 each.
Pro3D/IBM Version coming soon.
See your dealer for more information.

Pro3D and Easy3D trademarks of Enabling Technologies, Inc.
Macintosh and Macintosh Plus trademarks licensed to Apple Computer
IBM is a trademark of International Business Machines, Inc.

Circle 403 on reader service card

VideoWorks, *Apr 116, May 65,* ***122, Aug 108,*** *124, Nov 87*
Visions-Plus, *Jul 121*
Visual/Voice MAUG Conferencing, *Jun 25*
Vivarium project, *Aug 25*
VMI color monitor, *Sep 125, Nov 100*

W

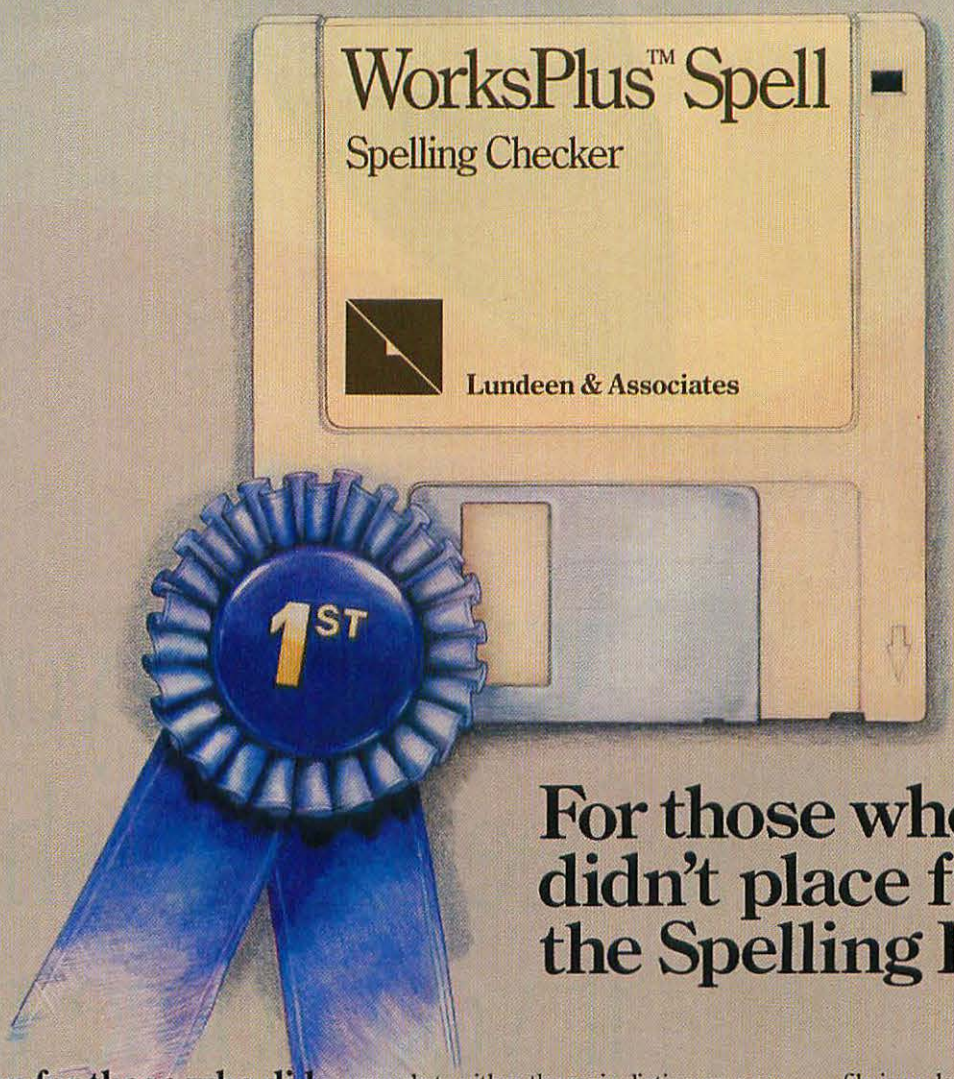
Warp Nine 800K disk drive, ***Nov 106 r***
WillWriter, ***Apr 140 r***
update, *Nov 196*
WindoWare Phone Book, *May 112*
Windows DA, *Apr 168*
Windows, resizing with ResEdit, *Feb 195*
Wizardry, ***Apr 138 r,*** *Dec 118*
Word. *See* Microsoft Word
Word Handler, *Jul 73,* ***Oct 143 r,*** *Nov 52, Dec 96*
Word Perfect, *Jul 73*
Word processing, ***Dec 96 r.*** *See also* MacWrite; Microsoft Word; Spelling checkers
Achbar, *Nov 154*
Brother printers, printing Word documents on, *Dec 44*
columnar tables, creating with spreadsheet, *Jan 154*
equations, *Sep 192*
fractions, *Jul 83*
HabaWord, *May 82, Nov 95, Dec 96*
Hebrew, *Nov 154*
MacAuthor, *Jul 73, Dec 44*
MacIndexer, ***Jun 138 r,*** *Oct 54*
MacSpec, *Jul 73*
MindWrite, *Dec 96*
MultiWrite, *Jul 73*
pasting text into other applications, *Jan 68*
pasting spreadsheet data into, *Jan 68*
Professional Bibliographic System, *Jan 45*
spelling checker overview, ***Jul 102 r***
stretching text, *Sep 194*
Word Handler, *Jul 73,* ***Oct 143 r,*** *Nov 52, Dec 96*
Word Perfect, *Jul 73*
WriteNow, *Dec 96*
Works, ***Oct 113 r***
pricing of, *Nov 67*
word processor, *Dec 96*
World Builder, *Apr 116,* ***Nov 138 r***
WORM disks, *Feb 100*
WOS Fund Accounting System, ***Sep 88***
WriteNow, *Dec 96*

X

Xanadu hypertext system, *Mar 116*
XLisp, *Nov 119*
X-10 Powerhouse, *Jul 69,* ***Nov 137 r***
Xyphus, *Dec 118*

Z

Zap Printing, *Jul 88*
Zen and the Art of Macintosh, *Dec 87* □



For those who didn't place first in the Spelling Bee...

and even for those who did.

You bought Microsoft® Works to save time and unnecessary effort. So, let WorksPlus Spell track words for your Works!

WorksPlus Spell is the fastest spelling checker on the market—***10 times faster*** than any other. Spell checks a two-page memo in 1 second; a 50-page proposal in less than 30 seconds!

Ever have trouble remembering the spelling exceptions? *"I before e..."*??? Spell doesn't. It knows all those endless rules as well as verb tenses, plurals, adjectives, and adverbs.

Can't remember a word's spelling? Spell can look it up for you. Simply type a command key and the first few letters and Spell will insert the correct word right into your document.

Spell can also check each word as you type without slowing your speed. A gentle beep warns you of a misspelling or typo. Just choose the correct alternative and continue typing!

Its main directory contains 70,000 words. If you need more, you can add words to either the main dictionary or a document's personal dictionary. Or, you can delete words.

But Spell is more than a spelling checker. Its Glossary feature saves you typing the same phrases over and over. Just abbreviate those frequently-used phrases. Spell will automatically insert the complete phrase for you. You can also use its automatic hyphenation feature to give your documents a compact, professional appearance.

WorksPlus Spell is *the* spelling checker to use with your Macintosh™ and Microsoft Works program. Spell is so well integrated that even the Works Help file is updated to include it. Now you can write, check, and print a document ***without ever leaving*** the Works program.

We're so sure that you'll win every time you use Spell that we'll include a blue ribbon with your purchase! In addition, Spell comes with a 30-day money-back guarantee so you can't lose.

Lundeen & Associates
P.O. Box 30038
Oakland, CA 94604

Circle 601 on reader service card

WorksPlus™ is a trademark of Lundeen & Associates © 1986.
Macintosh™ is a trademark licensed to Apple Computer, Inc.
Microsoft® is a registered trademark of Microsoft Corporation.

WorksPlus™ Spell

Send me ___ copies of WorksPlus™ Spell at $59.95 each $ _____.
In the USA & Canada, add $3.00 per copy for shipping and handling _____.
Outside the USA/Canada, add $10.00 per copy for shipping and handling _____.
CA residents add sales tax _____.
Amount enclosed $ _____.

To order by phone, call (800) 233-6851
in CA, call (800) 922-PLUS

Method of payment:
☐ VISA ☐ MasterCard ☐ Check

account number *exp. date*

signature

Ship to:
name _____
address _____
city _____
state _____ zip code _____


We'll give you
a free McIntosh*
if you come to
MACWORLD Expo/
San Francisco
at Moscone Center
on January 8-10, 1987
*McIntosh, the apple you eat.

MACWORLD Expo/San Francisco comes to Moscone Center January 8-10.

How about them apples?

This is the original computer show for both types of people in the world. Those who own a Macintosh™. And those who soon will.

In three days, under one roof, you'll discover tips, tricks, techniques, do's, don'ts, how-to's and why-for's that would otherwise take weeks to collect.

Attend dynamic seminars and product workshops run by industry experts. Visit hundreds of exhibits. Talk to the companies you hear so much about. See, touch and test drive an extraordinary array of hardware, software and peripherals first-hand. Fine-tune your Macintosh skills — on the spot. Do all this and more.

There's something for everyone. Even you, Mac.

It doesn't matter whether you're a power user or just about to take your first bite. After three days, you'll be chock full of information about Macintosh and what this remarkable computer can do to help you — in the office, at school or at home.

Find out how you can connect your Macintosh to the IBM world. Learn the innermost secrets of the industry's programming gurus. Master new ways to unleash the potential of your Macintosh.

There's literally something for every Macintosh user including Power User Seminars and a special Desktop Publishing Program. Also there is an Educational Forum guaranteed to interest teachers, students and administrators. All are exclusive to the MACWORLD Exposition.

One Macintosh deserves another.

Don't miss out on this opportunity to feast on Macintosh - the computer, not the apple. And pick up your free McIntosh* apple at the door.

When to come.

Thursday-Saturday, January 8-10, 1987
Exhibit Hours: 11 AM-6PM
Conference Hours: 12 Noon-6PM

How little it costs.

$40.00 for three-day admission to the conference and exhibits. $15.00 for three-day admission to exhibits only. No credit cards or checks will be accepted at Moscone Center.

Where it is.

The MACWORLD Expo/San Francisco will be held at Moscone Center, 747 Howard Street, San Francisco, California. Parking is available near Moscone Center.

For further information call Mitch Hall Associates at 617-329-7466.

MACWORLD Exposition is produced by World Expo Co., and managed by Mitch Hall Associates. MACWORLD Exposition is a registered trademark of World Expo Co., Inc. Macintosh is a trademark licensed to Apple Computer, Inc.

MACWORLD Exposition/San Francisco is the original Macintosh computer show. It's sponsored by MACWORLD, the Macintosh™ Magazine, a member of the CW Communications/Inc. family.

MACWORLD EXPOSITION
SAN FRANCISCO
January 8-10

Our exhibitor list (as of November 1, 1986):

3COM; Abaton Technology Corp.; Adobe Systems; Advanced Computer Graphics; Aegis Development; Affinity Microsystems, Ltd.; Aldus Corporation; ALP Systems; Altsys Corp.; Ann Arbor Softworks Inc.; Apple Computer, Inc.; Ashton-Tate; Assoc. of Apple 32 Users; Berkeley Macintosh User Grp.; Best Computer Supplies; Blackhole Technology, Inc.; Blowhard Industries; Blyth Software; Boston Computer Society; BPI Sytems; Bravo Technologies; Bree Communications, Inc.; C.I. Tech International, Inc.; Capilano Computing Systems, Ltd.; Casady Co.; Centram Systems West, Inc.; Challenger Software; Chang Labs; CLS Enterprises; Cognition Technology Corp.; Colby Systems, Inc.; CompServCo; CompuCover; Computer Friends; Computer Selection Business Center; Computer Ware; COMTREX; Comvest, Inc.; Consulair Corp.; Coral Software Corp.; Cortland Computer; Cricket Software; Dafax Processing/The Networkers; Data Tailor, Inc.; DataSpace Corp.; DataViz; Dayna Communications; DCM Data Products; DEVIONICS; Disk Man; Dove Computer Corp.; Dubl-Click Software; Dynamac; Dynamic Graphics, Inc.; E-Machines, Inc.; E.D.O. Communications; Educomp; Enzan-Hoshigumi Co.,Ltd.; Erez Anzel; Ergotron, Inc.; ExperTelligence, Inc.; Farallon Computing; Flex Ware; Forethought, Inc.; FTL Systems, Inc.; Future Design Software; FWB Software; General Computer Co.; Great Plain Software; Great Wave Software; Greene Johnson, Inc.; Hayden Book Company; Hayes Microcomputer Products; Heizer Software; Hewlett Packard; High Performance Systems; Human Touch Corporation; I/O Design, Inc.; Icon Concepts The Macazine; Imageworld, Inc.; Imagine Software; Impulse; InfoMax; Infosphere, Inc.; Innovative Data Design, Inc.; Intelitec; Internet; Invention Software; Jam Software; Jasmine Computer Systems; Kamar Wood Co.; Kensington Microware; Kent Marsh Ltd.; Knowledge Engineering; Kohoutek Co.; Layered, Inc.; Letraset U.S.A.; Levco Enterprises; Living Videotext; LoDown; Logic eXtension Resources; Lotus Development Corp.; Mac Buyer's Guide/Redgate Comm. Corp.; Mac News; MacAmerica; MacBriefs; MacMemory, Inc.; MACPACKS - LineBacker Co.; MacTutor; Macuser Publications; Magic Software; Mainstay; Manhattan Graphics; Mansfield Systems Inc.; Manx Software; MDIdeas, Inc.; Meta Software Corp.; Micah, Inc.; Micro Planning Software, USA; Microcomputer Publishing Group, Inc.; MicroGraphic Images Corp.; Microsoft Corporation; MicroStore; Microtek; MicroTimes; Mindscape, Inc.; Mirror Technologies; Monogram; N2 Products, Inc.; National Instruments; New Line 7 Graphics; Nolo Press; Odesta Corporation; Orange Micro, Inc.; Palantir Software; Palo Alto Shipping Co.; Panamax; PBI Software; PC World Communications, Inc.; Peak Systems; Peripheral Land; Peripherals Computers & Supplies, Inc.; Personal Bibliographic Software, Inc.; Personal Computer Peripherals Corp.; Practical Computer Applications; Pro Plus Software, Inc.; Pro-APP, Inc.; Prometheus Products; ProVUE Development Corp.; Q Ware, Inc.; QMS; Reach Technologies; Relax Technology; Rodime; Satori Software; Scott, Foresman and Co. Prof. Pub. Grp.; Select Micro Systems; ShowTime; Silicon Beach Software, Inc.; SmethersBarnes; SMS; SoftView; Software Power; Softworks Limited; Spectrum Holobyte; Springboard Software; Stanford Univ. Mac Users Group; SuperMac Technology; Symmetry Corporation; SYSTAT, Inc.; T/Maker Graphics; Tangent Technologies; Target Software, Inc.; The Office Place; Think Technologies; TML Systems; TPS Electronics; True BASIC, Inc.; Upgrade Technologies; Vision Technology, Inc.; Western Computer Co.; Williams + Macias Microcomputer Products; Zedcor



FOR YOUR EYES ONLY . . .

Subject: FullWrite™
Code Name: Ozone

For the past year, a small but dedicated group of crack programmers at Ann Arbor Softworks, Inc. has been hard at work on a top secret project. Our agent was able to snap the attached photograph of one of their workstations before being discovered and subsequently disassembled and recompiled. As you can see, the project appears to be a third generation document processor and is expected to obsolete all existing text based products. Rumor has it that a sneak preview will be available at the January MacWorld Exposition in San Francisco. All field agents are advised to proceed with caution to booth #911.

M2

Ann Arbor Softworks, Inc.
2393 Teller Road, Suite 106, Newbury Park, California 91320 (818) 769-8615
Circle 204 on reader service card
The prefix "Full" and FullWrite are trademarks of Ann Arbor Softworks, Inc.



Quick Tips

Answers to your questions

by Lon Poole

In August, I incorrectly advised readers that some of the keys on the Mac Plus keyboard don't work properly on a 512K Mac that hasn't been upgraded with the 128K ROM. David Dunham, author of the desk accessories *DiskInfo* and *Acta,* wrote to say that it's the System file version that matters; the Mac Plus keyboard works fine with the old 64K ROM, provided you use System file version 3.1.1 or a later version. "There are plenty of good reasons to get the 128K ROM and double-sided disks, but compatibility with the Macintosh Plus keyboard is not among them," he remarks.

Several people have written about typographical errors in the instructions given in August for attaching an ImageWriter to an IBM PC. Thomas Kennedy, of New York City, notes that the connecting cable for an original ImageWriter does not require female DB-25 connectors at both ends, as I said, but a male DB-25 connector at the printer end and a female DB-25 connector at the PC end. The connecting cable for an ImageWriter II requires a male mini-8 connector. See "Making Connections" for the correct wiring of both models' cables.

Sheri L. Richardson, a support technician for Haba Systems, has found that the settings I listed for the switches under the ImageWriter's front cover may result in "printing difficulties" on an original ImageWriter. "Such challenges may be avoided by closing switch SW1-5 as well as SW1-6," she says. She also observes that the ImageWriter doesn't recognize new switch settings unless you turn it off and back on.

PC	ImageWriter	PC	ImageWriter II
1	1	1	–
2	3	2	5
3	2	3	3
5	4	5*	1
6	20	6*	1
7	7	7	4**
8	–	8*	1
20	–	20	2
		–	8**

*Wired together at DB-25.
**Wired together at mini-circular 8.

Making Connections

Since the ImageWriter II uses a different cable than the ImageWriter to connect to an IBM PC, its pins must be wired differently, according to Apple's specifications for the DB-25 connector.

Q Determining Version Numbers

How do you determine the version numbers of the System, the Finder, and so forth?

David L. Pyle
Freeport, Texas

A Most application programs, including the Finder and Macintosh Pascal, report their version numbers along with other information when you choose About (program name) from the Apple menu. Recent versions of the Control Panel, the Chooser, and some other desk accessories display their version numbers in very small print in the windows that appear when you choose them. Similarly, recent versions of the ImageWriter and LaserWriter files show their version numbers in the dialog boxes that appear when you choose Print or Page Setup from any application program. If none of these methods work, try selecting the file's icon, choosing Get Info from the Finder's File menu, and checking the comments in the dialog box that appears.

As a last resort, you can do some detective work using Apple's *ResEdit* program: the version number may be stored as a type STR resource. For example, the System file version is noted in the STR resource by ID = 0. You can get a copy of *ResEdit* from user groups such as BMUG, 1442A Walnut St. #62, Berkeley, CA 94709; from GEnie's MacPro roundtable, file number 83, with documentation in file number 76; and from the Apple Programmer's and Developer's Association, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548).

Q Backing Up Desk Accessory Files

I understand the concept of backing up data, and I do it religiously. But how do you back up data that is on the Apple menu? I had two years' worth of projected data on a calendar, and one day it just disappeared from my Hard Disk 20.

Maxwell J. Richards
Smithtown, New York

A Desk accessories listed in the Apple menu store information in disk files the same way regular application programs do. The desk accessory files will be backed up along with everything else if you back up your whole hard disk at once using a program like *HD Backup* ($49.95 from PBI Software, 1111 Triton Dr., Foster City, CA 94404, 415/379-8765). Similarly, if you use such a program to back up only the files that have changed since the last backup and you have changed information in a desk accessory file, that file will be backed up automatically.

In order to back up desk accessory files individually, you must know their names and locations. The Scrapbook, for example, uses a file named Scrapbook File in the System Folder. File names often resemble the names of the desk accessories that use them, and the files are often located in the System Folder. Check the desk accessory documentation or call the publisher if you're not sure.

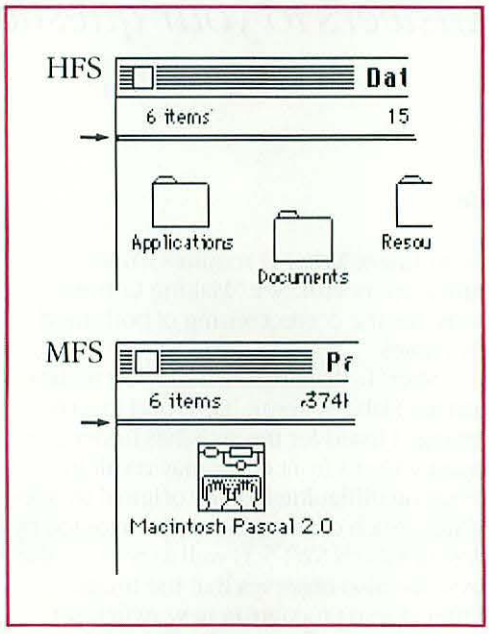
(continues)

Q Folder Trouble

Help! Two problems are driving me nuts. I am using a MacBottom 10 with HFS on my Mac 512K that has not been upgraded. Although I am supposed to be able to save to a particular folder, my system lists everything by document. How can I get folders outside the Finder? And recently, new folders I've created inside other folders have been renamed Unnamed #1, Unnamed #2, and so on, and moved to the main disk window the next time I quit an application. What am I doing wrong and how can I fix it?

Helen Phillips
Arvada, Colorado

A From the screen dumps you included with your letter, it's clear your MacBottom is not using HFS. If it were, you would see a tiny dot at the left edge of the disk and folder windows, between the parallel lines located ¼-inch below the title bar of the window. "The Telltale Spot" shows the difference between an HFS disk window and an MFS disk window. To use HFS on a Mac 512K with the original 64K ROM, the System Folder on your start-up disk must contain the Hard Disk 20 file. Be sure you have the latest versions of it, the System file, and the Finder: 1.1, 3.2, and 5.3, respectively, as of fall 1986. All these items are available in one product, the Macintosh System Software Update ($15 from Apple dealers), and you may be able to get them from user groups. After installing the HD 20 file, you'll have to completely back up your MacBottom using the HFS Backup program that came with it, then erase the hard disk, and finally restore its contents from the backup.



The Telltale Spot
The Finder indicates an HFS disk by displaying a dot as shown here. No such dot appears in an MFS disk window.

The backup, erase, and restore maneuvers should cure your folder troubles too. Those problems probably result from a garbled Desktop file, which is the invisible file that the Finder uses to keep track of its desktop organization. The Finder automatically reconstructs the Desktop file as needed, and you can force complete rebuilding by holding down the Option and ⌘ keys while starting up your Mac or when quitting an application. On an MFS disk, rebuilding the Desktop file results in folder names like those you mention. Also, comments in the Get Info box are lost after any disk is rebuilt, whether HFS or MFS.

(continues)

In January, at MACWORLD Expo/San Francisco, a new software package will be unveiled–a spreadsheet so revolutionary that it is being called the next generation spreadsheet.

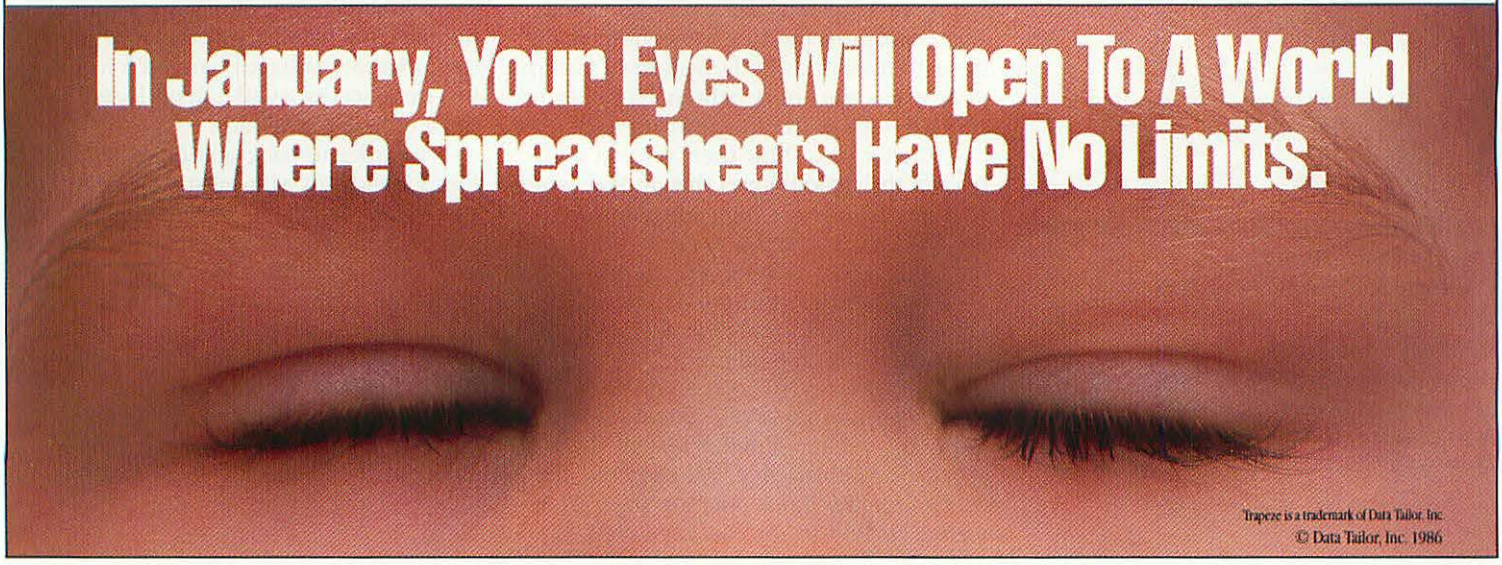
Trapeze™ stores information in blocks instead of cells. The blocks can be moved anywhere on the screen, and Trapeze still knows what they are and how they relate to one another. The block format allows great flexibility in page layout. Create graphs; import pictures, forms or text and place them on the same page as your calculations.

Trapeze is powerful, with over 100 business and engineering functions, many of which are unprecedented in a spreadsheet program.

For a demonstration of Trapeze, contact your local dealer or visit Booth 734 at the Expo. We'll open your eyes to the next generation spreadsheet.

Data Tailor, Inc.–1300 S. University Drive–Suite 409–Fort Worth, Texas 76107 (817) 332-8944

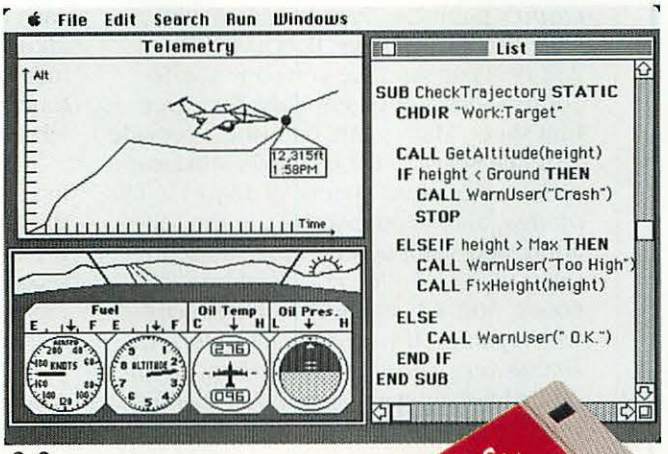
Trapeze™
The spreadsheet without limits.



Take the easy path to power.

More people use our Microsoft® BASIC than any other language on the Macintosh.™ Why? Because it's a powerful language that's simple and easy to use. But now there's a new, more advanced version available.

Introducing Microsoft's BASIC Interpreter for the Macintosh, Version 3.0.



Start with programming itself. We've used all the power of the Macintosh to make the process as effortless as possible. The full-screen editor and interactive debugging let you get your programs up and running quickly. Faster and easier than with any other language.



So advanced it's BASIC.

Don't worry about being restricted by the language. This new version features improvements like a block IF/THEN statement to make structured programming a snap. And we've just added a complete programmer's toolbox from Clear Lake Research. So now building your most advanced programs can be as simple as putting the pieces together. And it doesn't stop there.

Experienced programmers will like the easy access to the Macintosh ROMs—over 140 routines available through the toolbox. And there's advanced support for the Mac's sound and graphics, as well as the new hierarchical file system. There's even support for the Apple® LaserWriter.

Lastly, we've added a new runtime interpreter to the package. So now you can share your finished programs without extra cost or hassle.

When you look at all that the Microsoft BASIC Interpreter has to offer, the choice is clear. Even the price is easy to handle. Only $99 for the most popular language on the Macintosh.

If you're ready to stretch your programming muscles, give us a call at (800) 426-9400. In Washington State and Alaska, (206) 882-8088. In Canada, call (416) 673-7638. We'll give you the name of your nearest Microsoft dealer.

Microsoft® BASIC Interpreter for the Macintosh.

The High Performance Software.

Microsoft is a registered trademark of Microsoft Corporation. Apple is a registered trademark of, and Macintosh is a trademark licensed to Apple Computers, Inc.

The Perfect $9 Gift!



Choose From Our Top Selling Disks

MacWorld August '86
☐ 86 Best of Public Domain-12 programs $9
Art
☐ 37 Change, open/close paint. qckly, pict. ... $9
☐ 58 Poster any sz., scroll MacPaint docu. $9
Communication
☐ 29 Red Ryder-latest version w/documents .. $9
Desk Accessories
☐ 24 24 prog.: Mockterm., RPN calculator $9
☐ 36 Save screen, Corvus calendar $9
☐ 45 Compact memory, term. emul., telegraph . $9
☐ 68 Teleport, MiniDOS, icon maker $9
Education
☐ 75 Quizzes: French, geography, metrics $9
Fonts
☐ 81 18 fonts-Alexis, Cavanaugh, Candy, Boxie . $9
☐ 90 Boston II—laser qlty. for imagewriter $9
☐ 95 Laserwriter font + Amer. Sign Lang. font . $9
Games
☐ 62 Dungeon of Doom, Social Climber, etc... $9
☐ 67 Billiards, Volleyball, Juggling, etc. $9
☐ 78 Cap'n Magneto, MacBugs, Spacebubbles . $9
Home/Business
☐ 2 Card file, screenmaker, error codes $9
☐ 33 Multiplan templates: business, nutrit. $9
☐ 85 Excel templts.: mail labels — not pub. dom.. $9
Music
☐ 40 Compose, Smooth Talker demo, songs .. $9
Nudes
☐ 49 Girls! X-rated pictures of women $9
☐ 65 More Girls! $9
☐ 66 MacNudes: Digitized photos of women .. $9
Programming
☐ 44 XLISP 1.5: aritificial intelligence lang. ... $9
☐ 51,52,53 Modula 2 prgm. lang. w/docu. $27
Spelling
☐ 70 Spell Ck: MacWrite 2.2 or any text file .. $9
Utilities
☐ 5 Code Cracking w/doc, FEdit $9
☐ 6 ResEd: edit fonts & icons $9
☐ 7 Switcher, disk dump, Ramtest $9
☐ 25 Banner: prints to 8" letters, paintings $9
☐ 47 Ck drive spd., scrn. edit, dissassembler . $9
☐ 73 Calendar—personalize w/MacPaintings . $9
☐ 84 Print ASCII, Compress files, & more $9
☐ 87 BASIC Compiler-text files to mach. lang.. $9
☐ **Book:** 150 pg. directory of disks $7.95
☐ **1 Yr. Membership:** book, quarterly bulletins, plus many discounts $20
☐ **Library:** Complete set of 100 disks $695

SPECIAL OFFER!!
Any 3 Disks + Book
PLUS! **1 Yr. Membership**
ONLY **$39.95** (+S/H)

Add $4 ($10 foreign) for shipping and handling or $2 ($5 foreign) if ordering book only. CA orders add sales tax.

Enclosed $_____ by ☐ Check ☐ VISA ☐ MC
Card No. _____ Exp. _____
Signature _____
Name _____
Address _____
City _____ State _____ Zip _____

SoftCore
Formerly The Public Domain Exchange
2076C Walsh Ave., Dept. 105, Santa Clara, CA 95050
Call NOW to order 800-331-8125 or in CA call 408-496-0624
DEALER INQUIRIES INVITED

Circle 334 on reader service card

Stuck in Transylvania

In the adventure game *Transylvania,* you're supposed to find the princess Sabrina. I've tried everything. I can't seem to get the grate open, get the key, or see what is in the statue. Will you give me some advice on how to win?

C. A. Metcalfe
Spring, Texas

Here's a hint from Otto Waldorf, *Macworld*'s game guru: feed the frog. If you want more help, call *Transylvania*'s publisher, Polarware/Penguin (P.O. Box 311, Geneva, IL 60134, 312/232-1984) or send the company a self-addressed, stamped envelope for a free hint sheet. Many game publishers provide a similar service. For example, Mindscape returns free cheat sheets for *Déjà Vu, Uninvited,* and its other games in the self-addressed stamped envelope you send them (3444 Dundee Rd., Northbrook, IL 60062, Attn: Cheat Sheet Dept.; specify which game). If you're stuck on *Zork I, Hitchhiker's Guide to the Galaxy,* or another Infocom game, get the $7.95 hint book from your software dealer, or order it from Infocom's mail-order service (P.O. Box 478, Cresskill, NJ 07626, 800/262-6868).

A map and the solution to the Apple II version of *Transylvania,* which is very similar to the Mac version, appears in *The Book of Adventure Games* by Kim Schuette ($19.95 from Haba Arrays, 6711 Valjean Ave., Van Nuys, CA 91406). That book and its companion, *The Book of Adventure Games II,* include maps, descriptions, and clues for scores of adventure games—not specifically for Mac versions, but still valuable. Electronic bulletin boards (BBSs) are another good source of tips for adventure games, particularly the harder games. But beware; sometimes you get hints that help you keep playing, but other times you get outright solutions that ruin the game.

BASIC's FILLPOLY Statement

I am writing a Microsoft BASIC program in which a rectangle must alternately flash black and white. I intend to use this statement:

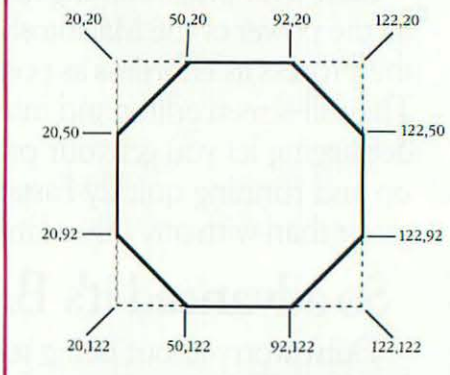
CALL FILLPOLY
(VARPTR(*polygon*%(0)),
VARPTR(*pattern*%(0)))

However, I really don't understand the statement. With what should I replace *polygon*% and *pattern*%? With what should I replace the zeros?

Niraj Sheth
Wyomissing, Pennsylvania

The CALL FILLPOLY statement calls a routine in the Macintosh ROM that fills a polygonal shape with a pattern. You define the shape in an integer array and use your array name in place of *polygon*%. Similarly, you define the pattern in another integer array and use its name in place of *pattern*%. In each case, the ROM routine needs to know where the integer array starts in memory, hence the use of the VARPTR function with the first array element, whose index number is 0.

The first element of the shape-defining array specifies the number of bytes in the entire array, including the first element itself (each element takes two bytes). The second through fifth elements specify the top, left, bottom, and right coordinates, respectively, of the rectangle that frames the polygon. Remaining elements specify the corners of the polygon: the sixth element specifies the first corner's *y*-coordinate, the




```
hexagon%(0)=46          hexagon%(12)=122
hexagon%(1)=20          hexagon%(13)=122
hexagon%(2)=20          hexagon%(14)=92
hexagon%(3)=122         hexagon%(15)=122
hexagon%(4)=122         hexagon%(16)=50
hexagon%(5)=20          hexagon%(17)=92
hexagon%(6)=50          hexagon%(18)=20
hexagon%(7)=20          hexagon%(19)=50
hexagon%(8)=92          hexagon%(20)=20
hexagon%(9)=50          hexagon%(21)=20
hexagon%(10)=122        hexagon%(22)=50
hexagon%(11)=92

CALL FRAMEPOLY (VARPTR (hexagon%(0)))
```

Your BASIC Hexagon
An integer array is used to define a polygon for several MBASIC statements. This example defines a hexagon.

(continues)

Break the BASIC speed limit.



If you've been cruising along with Microsoft® BASIC, get ready for the fast lane. Because the new Microsoft BASIC Compiler for the Macintosh™ is going to blow your socks off. This BASIC was designed for speeding.

Getting higher performance from your existing programs is easy. Just run them through our compiler. And then stand back. Because the speed increase can be phenomenal. Over ten times faster on the straightaway.

Don't lose time in the pits.

Faster time on the track would be pointless if you had to make pitstops for converting your programs. No problem. This compiler is as compatible as you can get with the Microsoft BASIC Interpreter for the Macintosh. All the features you've grown accustomed to are still around. From windows and graphics commands to music and sound effects. Dialog boxes and mouse commands. The works.

But we have to confess. Once we got under the hood we couldn't help tinkering a bit. So in addition to all the standard features of the Microsoft BASIC Interpreter, we added a few kickers. Power options like the new SELECT/CASE statement and block IF/THEN structures. Support for recursive procedures. And more. Now you can slide through the toughest BASIC curves without slowing down.

So shift your programs into high gear. Give us a call at (800) 426-9400. In Washington State and Alaska, (206) 882-8088. In Canada call (416) 673-7638. We'll give you the fast track to your nearest Microsoft dealer.

Microsoft BASIC Compiler Version 1.0 for the Apple Macintosh

Compatibility with Microsoft BASIC Interpreter for the Macintosh
- Executes the entire language as defined by the Microsoft BASIC Interpreter.
- Includes new features of the Microsoft BASIC Interpreter Version 3.0 such as block IF/THEN, HFS extensions, and a library of routines to easily access the Macintosh Toolbox.
- Graphics and animation support with access to QuickDraw routines.
- Sound effects with up to four simultaneous voices.

Other Compiler Advantages
- Executes Microsoft BASIC Interpreter programs 10-30 times faster.
- Create standalone programs without runtime fees.

Structured Programming Support
- Block IF/THEN/ELSE/END IF eliminates the need for GOTO statements.
- SELECT/CASE statements for powerful alternative to IF/THEN/ELSE.
- Fully recursive subprograms can be called by name and accept passed parameters.
- Alphanumeric labels can be used to make your programs more readable; line numbers are optional.

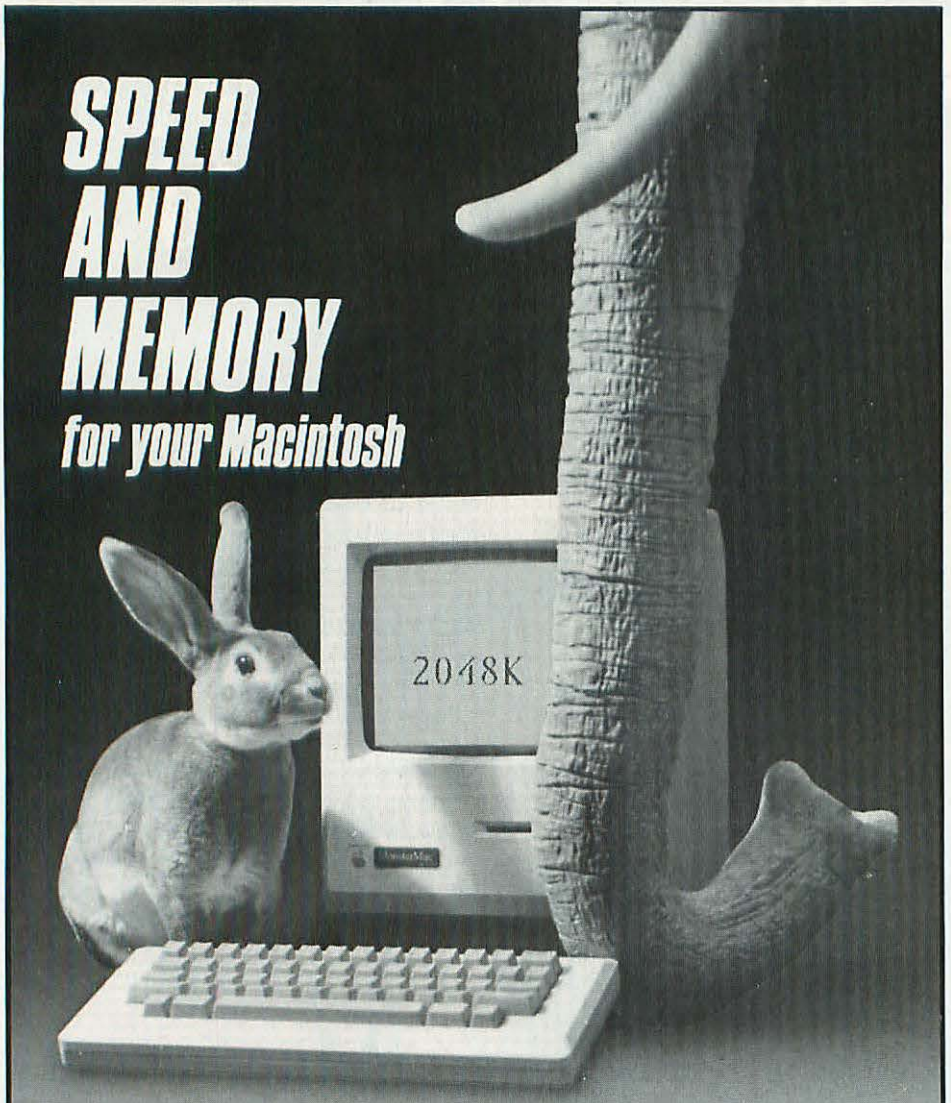
Large Program and Math Support
- No program size limitations; code and data can use up to available memory.
- STATIC arrays for optimal performance—DYNAMIC arrays for flexibility.
- Choose from binary and binary-coded decimal (BCD) math packages.

Compiler Options
- Compile a pre-defined list of files, or select individual files.
- Execute immediately upon compilation.
- Arrays default to STATIC or DYNAMIC.
- Transfer to editor.
- Optional long addressing for full memory usage.
- Optional array bound and stack checking.
- Optional runtime event checking.
- Link runtime into application, or keep separate.
- Several format choices for program listing.

Microsoft® BASIC Compiler

The High Performance Software

Microsoft BASIC Compiler for the Macintosh is a version of the Absoft BASIC Compiler, licensed from Absoft Corporation, Rochester Hills, Michigan. Microsoft is a registered trademark of Microsoft Corporation. Macintosh is a trademark licensed to Apple Computer, Inc. by McIntosh Laboratory, Inc.



MonsterMac-the high performance upgrade from Levco

Speed Boost MonsterMac boosts the speed of your Macintosh by 25-30%!

Extra Memory With up to 2.0 megabytes of contiguous RAM, you can use applications like MacWrite,™ Helix,™ Excel,™ Jazz,™ and PageMaker™ simultaneously, or create a 1.8-meg RAM Disk for a super-productive Macintosh

Proven Compatibility Fully compatible with original 64K ROMs and the current 128K Apple ROMs. Operates standard Macintosh applications without the handicap of configuration software.

Apple-Standard SCSI Support MonsterMac's on-board SCSI Controller provides a speedy interface to Macintosh Plus-compatible hard disk drives. Levco's 20-meg *OverDrive* is also available for those who want a reliable, internal hard drive.

Easy Clip-on Installation! With Levco's secure, patented Chip-Clip™ you can install the MonsterMac quickly and easily on a 128K or 512K motherboard. Requires no special skills or modifications to your Macintosh.

Cooler Running Unique, motorless MacBreeze fan is included to keep your MonsterMac quietly cooler.

Reliability You can have confidence in a MonsterMac. With over 2000 satisifed owners, the original 2 meg upgrade is a proven performer.

Levco
6160 Lusk Blvd.
Suite C-203
San Diego, CA 92121
(619) 457-2011

Macintosh™ is a trademark licensed to Apple Computer. MacWrite™, Helix™, Excel™, Jazz™, and PageMaker™ are trademarks of Apple Computer, Odesta Corp., Microsoft, Lotus Development, and Aldus respectively. MonsterMac, OverDrive and MacBreeze are trademarks of Levco.

menu gets the undesired text out of the way. Now I can easily select and move the desired text.

Deborah M. Leaf
Fond du Lac, Wisconsin

This method also works with nontext items—and is just as handy in MacDraw.

800K Disk—Hold the Folders

Tip: Some programs still aren't compatible with HFS. Does this mean you can use these programs only on 400K disks? Nah. Just follow this procedure to produce 800K MFS (non-HFS) disks.

1. Start up the Mac Plus or Mac 512K Enhanced using a start-up disk that contains System version 2.0 (creation date April 8, 1985) and Finder version 4.1.

2. Insert a disk in a double-sided (800K) drive.

3. Choose Erase Disk from the Special menu. The dialog box that appears does not give you a choice of initializing single- or double-sided. However, because the initialization process is a ROM routine in the new 128K ROM, the disk will be initialized for 800K anyway.

4. Open the newly initialized disk; you'll see 799K available and 1K in the disk. Copy the latest System and Finder you used in Step 1 to the disk along with your program and its files. If your program is copy protected, the program may not allow you to copy it. Programs such as *Copy II* ($39.95 from Central Point Software, 9700 S.W. Capitol Hwy. #100, Portland, OR 97219, 503/244-5782) and *Hard Disk Util* ($89.95 from FWB Software, 2040 Polk St. #215, San Francisco, CA 94109, 415/474-8055) unprotect software for backup purposes. They are very useful when copying programs from your 400K disks to your new 800K disks.

Joel S. Peskoff
Forest Hills, New York

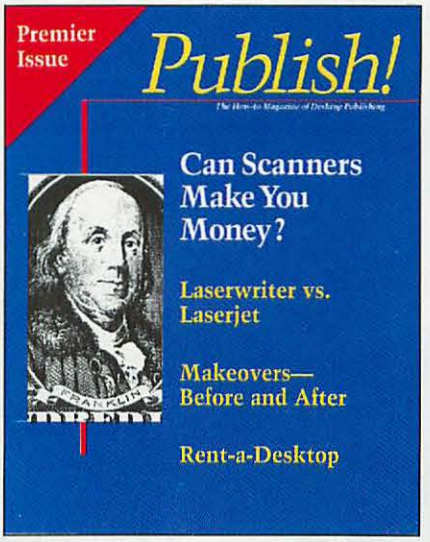
If you insert a brand new disk at Step 2, the dialog box appears automatically at Step 3, without making you choose the Erase command. You can't make 800K MFS disks on an unenhanced Mac 512K with an external 800K drive—you need the 128K ROM.

Send tips or questions to Quick Tips, Macworld, *501 Second St. #600, San Francisco, CA 94107. Send electronic mail to CompuServe 70370,702 or The Source BCW440. All published submissions become the property of* Macworld. □

From the Publishers of PC World and Macworld

Publish!

The How-to Magazine of Desktop Publishing



If you use a Macintosh or PC system to publish annual reports, newsletters, books, ads, brochures, or any other printed material, then you need Publish!, the How-to Magazine of Desktop Publishing.

Act Now for Charter Subscriber Savings—40% OFF!

Publish! is written, edited, and produced on personal computer–based systems. Because we're on the cutting edge of this new technology, you can depend on us for the expert information you need to establish your own personal publishing operation.

What You Will Find in Publish!

- Hundreds of new product listings
- In-depth reviews of hardware and software
- Cost-saving ways to prepare pages
- Shortcuts to help you get the most from available products
- Tips on the fundamentals of graphic design and publishing basics

All this and more, each month in Publish!

Fast Action Saves You Money!

For a limited time, Charter Subscriptions are available —just $23.95 for a full year (12 monthly issues). That's nearly 40% OFF the basic subscription price.

Take advantage of this limited-time Charter Subscription offer now. Mail the attached postpaid card or the coupon below. For immediate service, call TOLL-FREE (800) 222-2990.

Charter Subscription Savings

YES! *Send me one year (12 monthly issues) of Publish! at the Charter Subscription rate of $23.95. That's nearly 40% OFF the basic subscription rate.*

☐ *Payment enclosed* ☐ *Bill me later*
Charge my ☐ *Visa* ☐ *MasterCard*

Card No. (Please print)

Expiration date

Signature

Name

Company

Street

City

State *Zip*

Mail to: Publish!, Subscription Department, P.O. Box 51966, Boulder, Colorado 80322-1966.

Guarantee: If you're ever dissatisfied with Publish!, let us know. We'll promptly refund you for every issue remaining on your subscription. No questions. No problems.

Offer valid in the U.S. only. Please allow 6–8 weeks for delivery of your first issue.

Offer expires June 30, 1987. **5BP87**

Identical Twins?



Look closely.

The image similarity is uncanny. And beautiful!

The photo on the left is an original black and white print. The one on the right is a reproduction created with the remarkable Abaton Scan 300 optical scanner and printed out on a 300-dot-per-inch laser printer.

Notice the detail. And how the digitized copy retains the tones and textures of the original.

That's the consistent quality you get from the Abaton Scan 300. Whether you're using photographs, illustrations, diagrams or just about anything else that will fit in an 8½ × 14 or smaller image area.



The Abaton Scan 300 works with the Apple® Macintosh™ or IBM® PC. Additional hardware for printing and page composition may be required.

And you'll always get the same results you see above.

The Abaton Scan 300 automatically turns continuous-tone photographs into publication-quality halftones—with up to 32 levels of grey scale. Our C-Scan™ software gives you an added level of flexibility, including user-definable scaling, brightness and contrast, as well as complete image-editing capabilities.

And when used in conjunction with popular page composition programs—such as PageMaker™—you'll be able to add a new level of graphic precision and realism to everything you produce.

Contact your Abaton dealer (authorized IBM, Compaq or Apple dealer) today. Or write us and we'll put one in touch with you.

The Abaton Scan 300.

It's the easiest way to make two of a kind.

Abaton

Abaton Technology Corporation
7901 Stoneridge Drive, Suite 500
Pleasanton, CA 94566
(415) 463-8822

Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc. IBM is a trademark of International Business Machines Corporation. PageMaker is a trademark of Aldus Corporation.

Circle 622 on reader service



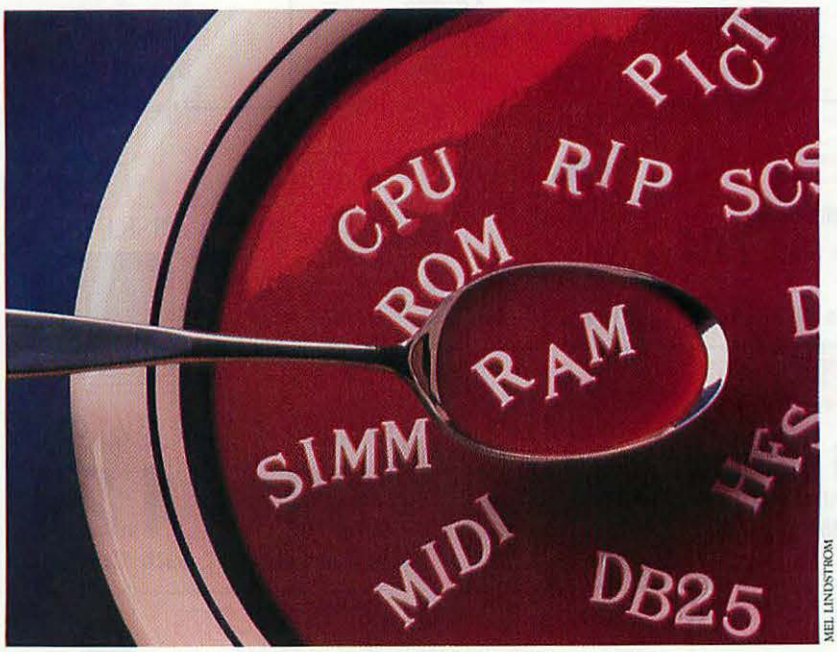
Getting Started with Mac Acronyms

Demystifying RAM, ROM, CPU, and other ingredients of alphabet soup

by Jim Heid

The computer field abounds with arcane terms, the worst of which are acronyms. Acronyms are the leftovers in language's bowl of alphabet soup—cryptic letter combinations often thrown together without the courtesy of a vowel to make them pronounceable. And pronouncing them is only part of the problem; understanding them is the other. The phrase "the 128K ROMs contain HFS and the SCSI drivers, which used to be loaded into RAM" is enough to baffle anyone attempting to grasp a computer's modus operandi.

But behind every acronym are real, sometimes comprehensible words. Some of those words and their meanings are the subjects of this month's *Getting Started.*



RAM Forgets

RAM and ROM are the acronyms you hear most often. Both refer to memory chips—the electronic components that perform the vital job of information storage. RAM stands for *random access memory,* often referred to simply as *memory,* and is the place where a program is loaded from disk. The Finder—the disk-management system that gives you the desktop—goes into RAM when you start the Mac. When you start a program, the Finder surrenders its place in RAM, then loads again automatically when you quit the program. (The MiniFinder was created because of this time-consuming loading process. Since the MiniFinder lacks the Finder's disk-management features, it's much smaller and loads more quickly, allowing faster transfers between programs.)

Many applications also store the documents you create in RAM. The *OverVue* database manager, the *ThinkTank 512* outliner, and the *MacPaint* drawing program are three examples. Other programs, such as *Microsoft Word, MacWrite,* and most database managers, swap information between RAM and a floppy or hard disk. The program keeps in memory only the portion of the document you're working on—perhaps a few pages in a word processor or several records in a database manager. This approach lets the program create documents larger than the available memory. The disk-and-RAM shuffle does slow performance, however, especially on floppy disk systems, since the program must occasionally access the disk to save or read part of a document.

The RAM chips in the Mac (and most microcomputers) are *dynamic RAM,* or DRAM—pronounced *dee-ram.* That means that other circuitry in the Mac must constantly *refresh* the chips to keep them from forgetting their contents, like a coach for a dance marathon prodding exhausted hoofers to keep them awake. Turn off the Mac's power, and you remove the coach and cause the RAM chips to go to sleep, sending your data into dreamland. That's why computers also provide permanent storage devices like disk drives, and why you use Save commands to commit your work to

(continues)

disk. (See *Getting Started with Disks,* December 1986, for more information on disks.)

Actually, part of the Mac's memory retains its information when the power goes. The Mac's *parameter RAM,* powered by the small battery above the on/off switch, remembers your Control Panel and Chooser settings. The battery also powers the Mac's built-in clock.

A computer's memory capacity is expressed in terms of how many thousands of bytes, or kilobytes (K, for short), the chips hold. Because any keyboard character can be represented by one byte, the word *character* is often used instead of *byte.* The original Mac contains 128K of RAM—about 128,000 characters' worth. The Macintosh 512K expanded RAM to roughly 512,000 characters, while the Mac Plus doubled that to a million characters, or a *megabyte.* It's important to realize, however, that the Mac's operating system and the programs you use require a great deal of memory. You can't really store a document 1 million characters long in a Mac Plus. After loading the operating system and a moderately sized program like *Word,* roughly 790K is available.

ROM Never Forgets

The other kind of memory in the Mac is ROM, or *read-only memory.* ROM is to RAM what phonograph records are to cassette tapes: a permanent, unerasable storage medium rather than a reusable one. And like records, the contents of ROM are prerecorded at the factory.

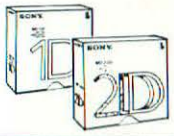
In most computers, ROM holds only a small amount of system software, such as code that tells how to access the keyboard and screen. The Mac's ROM plays that role, as well as a much more significant one. It contains software that application programmers call on to create pull-down menus, windows, dialog boxes, and all the other elements of the Mac's *user interface.* This built-in personality is what makes almost all Macintosh programs look and operate in the same basic way. (Unfortunately, not every programmer takes advantage of the user interface code built into the machine. Some programs enter the Macintosh scene without any pull-down menus or other Mac traits. They usually leave the scene quickly.)

But ROM doesn't have sole custody of the Mac's operating system. Some instructions load into RAM during start-up. Such code may fix a bug in ROM or may have

(continues)

Happy Holidays!

SONY® 3½ Disks Boxed in tens

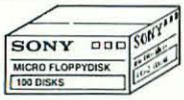


	50+	100+
3½" SS	1.17	1.14
3½" DS	1.74	1.69

FREE!
You get a free VHS or Beta Video tape with every 50 SONY boxed disks purchased from this ad.



SONY MAC • PAC
Packaged in fifties



	100+	400+
3½" SS	1.09	1.05
3½" DS	1.44	1.39

Labels available —Call today!

Nashua™



Boxed in tens
3½" Single Sided **1.04** ea., 100+
3½" Double Sided **1.32** ea., 100+

wabash DATATECH DISKETTES
Boxed in tens

- Lifetime warranty
- 100% error free
- Labels, write protects and envelopes



3½" SS	3½" DS
.99 each, Qty. 100+	1.29 each, Qty. 100+

INCOMM Turbo
External Modem $329.00

- Includes MAC Cable
2400/1200/300 BPS

SURGE SUPPRESSORS
6-Outlet



$14.95

- Normal and common mode suppression
- Low let-thru voltage

CONTROL CENTER

- Upfront, individual switching for up to five devices
- Total MAC compatibility
- Built-in circuit breaker

$49.95



RIBBONS
*Sold in sixes



APPLE IMAGEWRITERS
Black $2.35
Color $3.05
(one each red, green, blue, brown, purple, yellow)

Other ribbons available. Our Flex operators will find the one you need—call today!

CALL TOLL FREE
7 to 7 Central Time
10 to 3 Saturdays

1 800 USA-FLEX
(1 800 872-3539)
In IL 1 800 FOR-FLEX (1-800-367-3539)

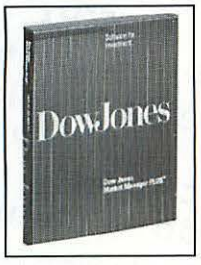
USA FLEX
135 N. Brandon Drive, Glendale Heights, IL 60139

TERMS: Shipping/handling additional. Minimum order $100. Visa, Mastercard and Prepaid orders accepted. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. COD orders add an additional $5.00 special handling charge, APO, FPO, AK, HI & PR orders add an additional 5% to the total order amount to cover PAL and Insurance. No Sales tax outside of Illinois. All other countries add 20%.

Circle 134 on reader service card

Market Manager PLUS.™

The investment software that helps you stay ahead of the odds.



In today's dynamic market, staying ahead of the odds means staying on top of your investments—making sure you have the right information at the right time to manage your portfolio effectively.

Market Manager PLUS offers portfolio management for the active investor. By linking you with Dow Jones News/Retrieval,® it provides comprehensive automatic updating and reports.

Here's what it gives you:

- Automatic portfolio valuation updates.
- Automatic dividend distribution.
- Automatic stock-split routines.
- Automatic bond and treasury bill maturity alerts.
- Automatic option expiration and stock long-term alerts.
- Interest and dividend tax reports.
- Holdings reports by portfolio and security symbol.
- Plus much more.

Market Manager PLUS gives you easy access to the portfolio information you need to make informed investment decisions.

Demonstration disk. Just $5.*

We've prepared a demo disk to show you how easy it is to manage investment portfolios. Learn how you can stay ahead of the odds, call:

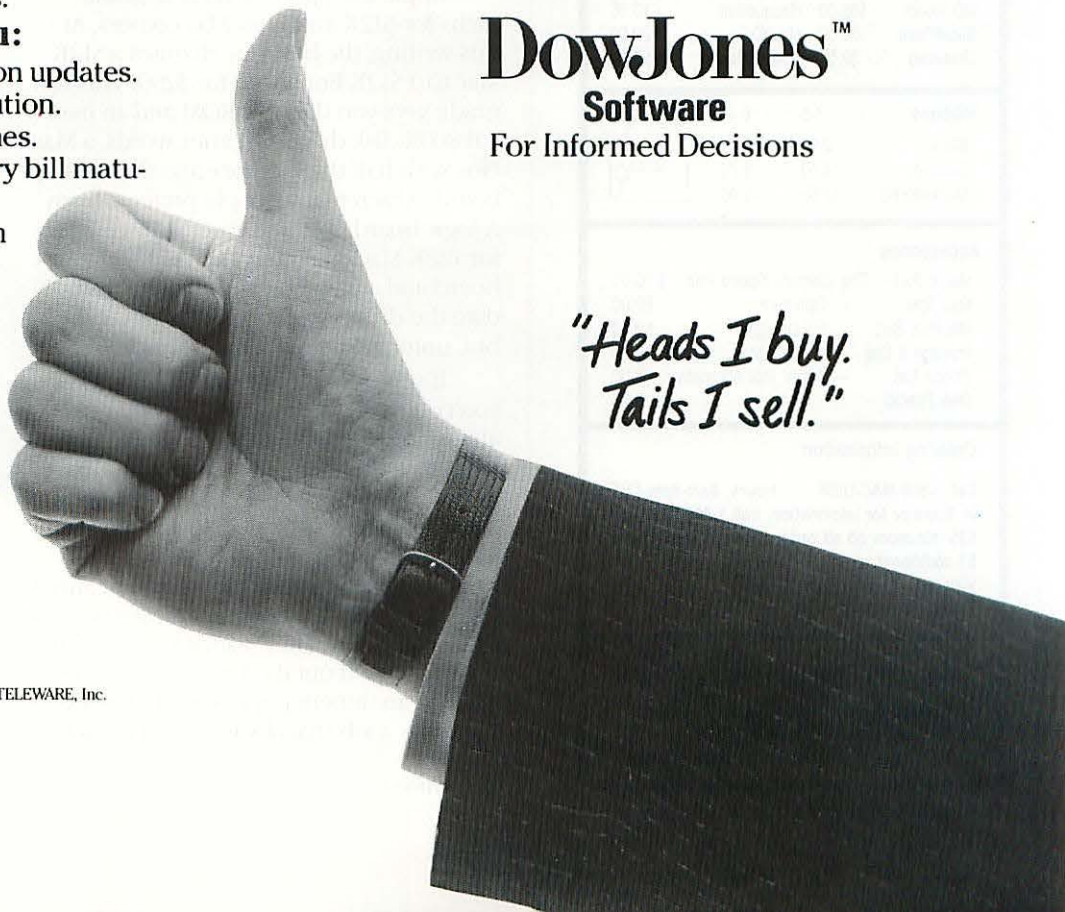
1-800-345-8500, extension 48.
(Alaska and foreign call 1-215-789-7008 ext. 48.)

Have your credit card information ready, including expiration date. VISA, MasterCard, and American Express accepted.

Act now – Offer good for a limited time only.
*Please add $2.50 for shipping and handling.

Market Manager PLUS works with IBM® PC, IBM XT™, IBM AT®, Apple® Macintosh™, Apple IIc and IIe.

DowJones™
Software
For Informed Decisions



Market Manager PLUS by Dow Jones & Company, Inc. and TELEWARE, Inc.
©1985 Dow Jones & Company, Inc. All Rights Reserved.

Circle 355 on reader service card

been deliberately left out of ROM because it performs a task that may change as the Macintosh and its peripherals evolve. For example, controlling software for the Mac Plus's SCSI expansion connector is patched into RAM to correct bugs.

ROM for Improvement

One question you may occasionally hear is, "Which ROM do you have?" The Macintosh Plus premiered with twice the ROM of the original Mac–128K versus 64K. The new ROM chips contain revised system software. Many of the revisions represent performance improvements, but the main reason for the extra ROM is to hold the Hierarchical File System (HFS), the new disk-management software that lets the Plus take better advantage of hard disks and 800K floppy disks. I examined some of the differences between HFS and the original Macintosh File System (MFS) in last month's column.

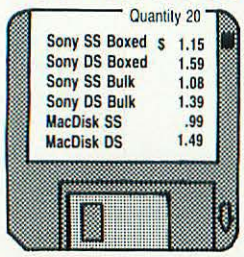
If your Mac contains the original 64K ROM, unflatteringly referred to as "the old ROM," you might consider upgrading. The 128K ROM boosts the machine's performance and adds niceties such as improved text display and a zoom box for quickly resizing windows to fill the screen. (Programs must be written to take advantage of the new ROM's features, however. Most programs released after the Mac Plus's debut in January 1986 are compatible.)

Apple has paved several upgrade paths for 512K and 128K Mac owners. At this writing, the best buy changes a 512K Mac to a 512K Enhanced for $299. This upgrade gets you the new ROM and an internal 800K disk drive–in other words, a Mac Plus with half the memory and the old keyboard, which many people prefer anyway. A logic board upgrade costs $599 ($799 for 128K Macs) and buys a Mac Plus logic board and a new rear case (to accommodate the different-size port connectors) but, unfortunately, not the 800K drive.

If you opt for the logic board upgrade, you could save money by keeping your 400K internal drive and buying an external 800K disk drive other than Apple's. Drives from DataSpace, PKI, and others are often discounted to less than $250 and are compatible with, and in one way superior to, Apple's. Apple's 800K drives have an annoying habit of occasionally refusing to eject a disk completely. They suck it back in, forcing you to pull out the Universal Disk Disgorger (an unbent paper clip) to rescue the disk–a job that always gets a guffaw

(continues)

1-800-MAC-DISK



Upgrades

128K to 512K	$ 139.00	MacPlus	
512K to 1024K	219.00	2MB	$ 275.00
128K to 1024K	339.00	4MB	1395.00
SCSI Port	89.00	Dove Upgrades Available	

180-day Warranty on All Upgrades
Over 3000 upgrades completed

Hardware

SCSI Hard Drives			
Magic20	$ 699.00	Magic65	$ 1399.00
Magic30	899.00	Magic235	3399.00
The Keeper			
20 MB			2395.00
40 MB			3395.00
Laser Writer Spooler			(call)
Dataspace 800K			209.00
Avatex 1200 Baud Modem			109.00
Packard Bell 2400 Baud Modem			329.00
Numeric Turbo			109.00
Turbo Touch			78.00
Ehman 800K			219.00

Software

Dark Castle	$ 35.00	Mac Lightning 2.0	$ 54.00
GraphicWorks	52.00	Hard Disk Utilities	66.00
More	156.00	MS Flight Simulator	34.00
MS Works	185.00	Laserspool	65.00
SuperPaint	58.00	Racquetball	13.95
Uninvited	32.00	Mac3D	129.00
		Smart Alarms	29.00

Ribbons

	1-5	6+
Black	2.95	2.75
Colored	4.50	3.75
Multicolored	13.00	12.00



Accessories

Magic Pad	– The Ultimate Speed Pad	$ 10.95
Mac Tote	– Optimum	69.00
MacPlus Bag	– I/O Designs	59.00
Immage II Bag	– I/O Designs	55.00
Phone Net	– Apple Talk Alternative	38.00
Disk File/30		7.95

Ordering Information

Call 1-800-MAC-DISK Hours: 8am-8pm CST
In Texas or for information, call 1-800-262-2839
$25 minimum on all orders, Shipping minimum $3 additional
Visa, MC, C.O.D., PO's, Checks
Texas residents add 6⅛% sales tax

Vision Technologies
2200 Guadalupe Street, Austin, Texas 78705
Dealer Inquiries Welcome
Quantity discounts available upon request

Circle 459 on reader service card

Auto-Downloading
LASER FONTS
For Mac & Laserwriter • Linotronic • PostScript

CAPS & FRACTIONS $^{1}/_{3}$ $^{12}/_{356}$
STANDARD $34.95 PER TITLE

Symbols+ 300 symbols in one package, including PostScript Cairo and Taliesin.

Willamette (Med. & X-Lt.)
Thames Congo
Los Angeles
Hudson Rubicon
Saratoga Seine
Neosho (Light & Bold)
Devoll Styx
Spokane Cumberland
Manistee (Lt. & Bold)
Rhine Yukon
Potomac Trent
Colorado Columbia
Shadow Effects Fourteen special effects: Gray type, 3-D shadows, and more.

MicroFonts+ The LaserWriter's (& LW+'s) built-in fonts in expanded, condensed and very small versions.

Hand-crafted by professional artists (Med & Demibold together).
DESIGNER SERIES $44.95 PER TITLE

ITC Eras
ITC Avant Garde ITC Kabel
Micron Missive
Terra Gothica
Opus HelHeavy

Print in all Mac styles, plus expanded & condensed with any program. Accents, printer's bullets & spaces.

Multi-Font Discounts! To order, see your dealer or: •Clip this ad and circle the fonts you want, or write them out. •Price is total minus 2% for each pack from 2 to 21 (Example: for 10-font order, discount is 18%). Max. discount 40%. •Add $3 shipping ($5 for rush). We gladly ship COD (US street address only). •Catalog with full-page print samples of each font, $1.

What you see is what you get: This ad was printed on a LaserWriter, and was not photographically reduced.

Attention artists! We're always looking for quality fonts...

Century Software
2483 Hearst Ave. #175 (213) 829-4436
Berkeley, CA 94709 (415) 549-1901

Circle 571 on reader service card



INSIDE OHIO 1-800-225-0755
OUTSIDE OHIO

YOUR TOLL FREE ACCESS

1-800-228-0755

CALL...FOR THE BEST PRICES...
BEST DELIVERY...
We have hundreds of other programs in stock at Fantastic savings.

SILICON EXPRESS

LASER 128—APPLE COMPATIBLE COMPUTER $395.95

Accessory Pak 1	19.95
Airborne	20.95
Alter Ego Female	29.95
Alter Ego Male	34.95
Amazon	29.95
Ancient Art of War	26.95
Archon	22.00
Art A La Mac Vol. 1	23.95
Art A La Mac Vol. 2	23.95
Back to Basics	
General Ledger	104.95
Accts. Receivable	104.95
Accts. Payable	104.95
Ballyhoo	22.95
Balance of Power	29.95
Barron	34.95
Basic Interpreter	88.95
Battery Pak	26.49
Borrowed Time	26.95
BPI Gen. Accting	298.95
Brataccus	26.95
Bridge 4.0	14.95
Chmpshp. Boxing	23.95
Chart	71.95
Chess Master 2000	27.95
Click Art	29.95
Click Art Effects	29.95
Click Art Letters	29.95
Click Art Publishing	29.95
Click On Worksheet	47.95
Comicworks	47.95
Computer Baseball	23.95
Copy II Mac	18.50
Coveted Mirror	13.95
Crimson Crown	13.95
Crunch	179.95
Cus. Calculator. Con.	37.95
Cutthroats	23.69
Cyborg	23.95
Deadline	28.00
DeJa Vu	29.95
Deluxe Music Const.	31.95
Desk Organizer	59.95
D. Francis High St.	23.95
Dollars & Sense	80.95
Dragonworld	29.95
Dynamic Reader	41.95
Easy 3-D	59.95
Enchanted Scepters	23.95
Enchanter	22.00
Excel	224.95
Factfinder	83.95
Fahrenheit 451	29.95
Felony	14.95
Filefinder	98.95
FileVision	119.95
FileVision, Bus.	239.95
Financial Cookbook	31.95
First Base	119.95
First Port	59.95
Flight Simulator	34.95
Fluent Fonts	28.95
Fooblitzky	27.95
Forbidden Castle	23.95
Forecast	40.95
Fortran	168.95
Front Desk	89.95
Fullpaint	54.95
Gato	25.95
Gemstone Warrier	20.95
Geometry	59.95
Golden Oldies	24.95
Gold Finger	23.95
Graphics Accents	28.95
Graphics Magician	34.95
Great Paper Airplane	23.95
Hacker	26.95
Helix	239.95
Helix, Double	299.95
High Stakes	23.95
Hitchikers	22.00
Home Accountant	51.95
Infidel	26.00
In Touch	78.95
Kidtalk	38.95
Lode Runner	23.95
Logo	74.95
Luscher Profile	23.95
Mac Art Department	23.95
Mac Calendar	59.95
Mac Challenger	29.95
Mac Checkers	29.95
Mac Fun Pak	23.95
Mac Gammon/Crib.	29.95
Mac K.A.T.	144.60
Mac Lighting	59.95
Mac Line	89.95
Mac Spell+	54.95
Mac the Ripper	26.95
Mac 3-D	114.95
Mac Type	25.95
Mac Vegas	34.95
Mac Vision	179.95
Mac Wordhandler	69.96
Mastertype	29.95
Math Blaster	26.50
Math Flash	25.95
Millionaire	34.95
Mind Forever Voy.	28.95
Mindprober	34.95
MindShadow	26.95
Mist	23.95
Multiplan	104.95
Murder by the Dozen	14.95
One On One	24.95
Overvue	179.95
Perfect Score SAT	46.95
Personal Accountant	54.95
PFS: File	69.95
PFS: Report	69.96
PFS: File & Report	104.95
Pinball Construction	21.25
Planetfall	22.00
Pyramid of Peril	29.95
Quset	13.95
Racter	26.95
Rags to Riches	
General Ledger	98.95
Accts. Receivables	98.95
Accts. Payable	98.95
Three Pack	248.95
Rambo First Blood II	23.95
Rendezvous W/Rama	29.95
Rev. of the Ancients	23.95
Sargon III	27.20
Seastalker	22.00
Sidekick W/Phonelink	58.95
Silicon Press	47.95
Skyfox	24.25
Sorcerer	26.00
Spellbreaker	34.94
Spell It	26.50
Smart Eyes	35.95
Smoothtalker	48.95
Spelling Bee	38.95
Squire	34.95
Star Baseball	20.95
Starcross	28.00
Suspect	26.00
Suspended	28.00
Sword of Kadash	13.95
Transylvania	13.95
Tycoon	34.95
Type Fonts for Text	28.95
Type Ft. for Hdlines	41.95
Typing Tutor III	35.95
Uninvited	29.95
VideoWorks	57.95
View to a Kil	23.95
Voodoo Island	23.95
Willwriter	26.95
Wishbringer	27.95
Witness	22.00
Wizardry	35.95
Word	110.95
Word Play	25.95
Xyphus	13.95
Zork I	21.75
Zork II	24.75
Zork III	24.75

HARDWARE

Mac 10 (Paradise)	699.95
Mac 10 (Tecmar)	1699.95
Mac 20 (Paradise)	1099.95
Quickstick	44.95

YOUR ORDER FORM
SILICON EXPRESS
5955 E. Main St. Columbus, Ohio 43213

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

CHARGE CARD # _____ Exp. Date _____

QTY.	DESCRIPTION	PRICE

Computer Type _____ SHIPPING

Phone No. _____ TOTAL

No additional surcharge on Mastercard, Visa, or School purchase orders. Personal checks allow 2 weeks. Shipping charges are $3.00 minimum. Ohio residents add 5½% state sales tax. Prices subject to change without notice

SILICON EXPRESS
5955 E. Main St. Columbus, Ohio 43213
1-614-868-6868

Circle 555 on reader service card

out of onlooking IBM PC users. For the scoop on 800K external drives, see "Both Sides Now," *Macworld,* November 1986.

Performance Issues

Which upgrade is best? A 512K Enhanced Mac is generally as fast as a Mac Plus, except when running very large programs like *PageMaker* or *dBase Mac,* which can keep more of their complex code in RAM at once. But the Plus's extra memory has another advantage. You can dramatically boost performance by using a special type of program, available through user groups, that sets aside part of the RAM as an electronic disk, or *RAM disk.* To the Mac's operating system, a RAM disk looks like a disk drive. You can store programs in a RAM disk and open and close them at blazing speeds, since RAM has no mechanical parts to slow down data transfer. Some people also store documents in RAM disks, but because RAM forgets when the power is cut off, doing so leaves your work at the mercy of power problems.

The 128K ROM also allows a performance-boosting technique similar to a RAM disk called a *RAM cache.* Rather than storing a specific set of files and programs in memory, as a RAM disk does, a RAM cache monitors disk activity and copies frequently accessed areas of a disk into memory, decreasing the need for more time-consuming disk access. RAM caches are especially useful if you repeatedly use the same programs, since portions of a program remain in the cache when you quit, eliminating the need to load them from disk when you restart the program.

You specify the capacity of the disk cache using the Control Panel on the Apple menu. A large disk cache generally boosts performance more than a small one since more information can be held in RAM. Contrary to wild rumors, when you select Save, data in the cache *is* written to disk. For more information on RAM disks and caches, see "The Mac's Best Performance," *Macworld,* October 1985.

The full Mac Plus upgrade supplies one more performance edge, one that becomes important if you decide to add a hard disk to your system: a SCSI port. Short for *Small Computer Systems Interface* and inelegantly pronounced *scuzzy,* a SCSI port opens the Mac's doors to hard disks that are far faster than those that connect to Macs without SCSI ports (see "Shopping for SCSI Storage" in this issue).

Hello, Central

RAM, ROM, SCSI, and the rest would be nothing without the *central processing unit,* or CPU. The CPU is the main brain, the microprocessor chip that executes the individual instructions that form a program, and that shepherds data between disk and memory and between memory and expansion ports. In short, the CPU has a hand in virtually every task performed by the computer.

A microprocessor's activity follows the beat of an extremely stable electronic metronome. Many factors govern a computer's speed, but the number of times per second the machine's metronome ticks is foremost among them. The clock governing the Mac's Motorola MC68000 microprocessor ticks 8 million times per second, giving the Mac a *clock rate* of 8 million hertz (cycles per second), or 8MHz. The IBM PC's Intel 8088 microprocessor, by contrast, shuffles along at a more leisurely 4.77MHz. Future Macs are likely to have a different micro-

(continues)

The next step...

First Altsys introduced FONTastic™, the instantly popular bitmap font editor. People said we had defined the state of the art.

"FONTastic is the best font editor now available for the Mac." — MacUser

Next we developed Fontographer™, our highly acclaimed PostScript® font editor. Critics agreed we had again established an industry standard.

"Fontographer makes font design seem easier than it really is yet maintains the professional control needed to manage this exacting process." — Publish!

Now we announce the next generation bitmap font editor.

Coming January, 1987... FONTastic Plus.

ALTSYS CORPORATION
720 Avenue F, Suite 108
Plano, Texas 75074
214 / 424-4888

Circle 227 on reader service card

MAN DOES *NOT* LIVE BY HELVETICA® AND *TIMES* ROMAN® ALONE.

Sometimes it takes the drama of Benguiat to get the message across. Or the immediacy of American Typewriter. Or the authority of Bookman Bold.

So why limit your LaserWriter® or POSTSCRIPT® printer to standard Helvetica and Times Roman?

Today, Adobe Systems' Type Library offers you a veritable feast of type styles which have been licensed from the world famous libraries of Mergenthaler and International Typeface Corporation. With versions in regular, *italic*, **bold** and ***bold italic.*** Over 45 classic styles in all—and more to come.

Adobe type styles let you produce professional quality newsletters, direct mail pieces, client presentations and ads just like this one. Right on the spot.

Let your POSTSCRIPT printer start doing the whole job for you. Ask your Apple LaserWriter dealer about the Adobe Type Library today. Or call us directly at 415-852-0271.

P.S. Also ask your dealer about POSTSCRIPT, Adobe Systems' internationally recognized page description language.

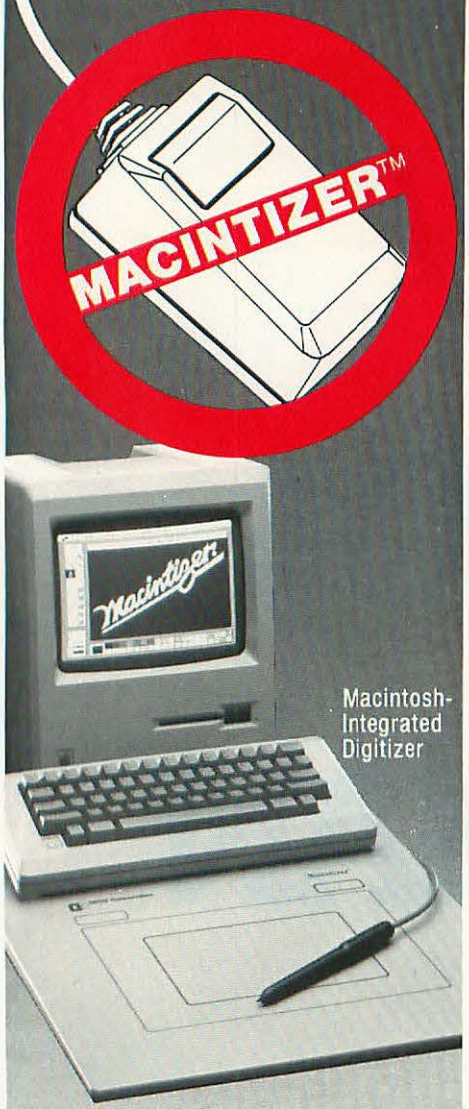
A sampling from the Adobe Type Library: ITC American Typewriter.® ITC Avant Garde Gothic.® ITC Benguiat.® ITC Bookman.® Friz Quadrata. ITC Garamond® Glypha.® ITC Lubalin Graph.® **ITC MACHINE.®** New Century Schoolbook. Optima.® Palatino.® ITC Souvenir.® *ITC Zapf Chancery.®* ITC Zapf Dingbats.® ☞

ADOBE SYSTEMS INCORPORATED

POSTSCRIPT is a registered trademark of Adobe Systems Incorporated. LaserWriter is a trademark of Apple Computer, Inc. Helvetica, Times Roman, Glypha, Optima, and Palatino are all trademarks of Allied Corporation. ITC American Typewriter, ITC Avant Garde Gothic, ITC Benguiat, ITC Bookman, ITC Garamond, ITC Lubalin Graph, ITC Machine, ITC Souvenir, ITC Zapf Chancery and ITC Zapf Dingbats are all trademarks of International Typeface Corporation.

Circle 552 on reader service card

The Mouse Is Out!



The Macintizer is *better* than a mouse: its stylus gives you precise control for drawing, you can trace original artwork, and it won't clog or skip.

PLUS, the Macintizer plugs directly into the mouse port for 100% compatibility with all your programs—no software modifications required.

Turn your Macintosh into the graphics machine it was meant to be—with the Macintizer.

Contact your dealer or GTCO Corporation for more details.

GTCO Corporation
1055 First Street, Rockville, MD 20850
Phone: (301) 279-9550 Telex: 89-8471

Circle 323 on reader service card

Alphabits

ASCII *(askee)* American Standard Code for Information Interchange. A standard that defines the way letters, numbers, special characters, and certain control characters (such as carriage returns) are stored in the computer. ASCII often represents the only common ground between different models of computers. It enables various personal computers to communicate via modems and exchange ASCII data files, which do not contain any codes or characters specific to a particular brand of computer. On the Macintosh, ASCII files are often called *text only* files.

DB-9 *(dee-bee-nine)* The nine-pin connector used for both the modem and printer ports on the Macintosh (not the Macintosh Plus).

DB-25 *(dee-bee-twenty-five)* The 25-pin connector used for the SCSI port on the Macintosh Plus.

MIDI *(middy)* Musical Instrument Digital Interface. An expansion standard for musical instruments that lets you connect synthesizers together and to computers for music recording and playback (see "Musical Wares," *Macworld,* February 1986).

PICT *(picked)* A format in which many Macintosh programs, including *MacDraw,* can save graphic documents.

RIP *(rip)* Raster imaging processor. The imaging engine of a laser printer, which turns page descriptions (in PostScript, for example) into print. The LaserWriter is a RIP.

RS-422A *(are-ess-four-twenty-two-a)* The type of serial communications interface used for the Mac's modem and printer ports. RS-422A is a faster version of the RS-232C standard, the type of communications port found on IBM PCs and many other computers.

SCSI *(scuzzy)* Small Computer Systems Interface. The high-speed expansion port used for attaching hard disks and other peripherals to the Mac Plus.

SIMM *(sim)* Single in-line memory module. The RAM expansion modules that allow you to increase the RAM in the Macintosh Plus.

Xmodem *(eks-modem)* A method of transferring files over a modem that ensures that no data is lost or garbled.

processor, probably the Motorola 68020. The 68020 (pronounced *sixty-eight-oh-two-oh* or *sixty-eight-twenty*) is compatible with 68000 instructions—a vital characteristic if future Macs are to remain compatible with today's machines—but can operate faster and has additional, more powerful instructions.

Letter Rip

I've covered the Big Three acronyms—RAM, ROM, and CPU—but there are many others, as well as a world of abbreviations, that you may encounter. Some common ones are defined in "Alphabits." When you run into one that isn't, don't panic. Remember, most acronyms are just someone's nasty way of turning a few understandable words into a mysterious jumble of letters. You simply have to find out what the letters stand for.

But pronunciation can also be a problem. SCSI may be pronounced as a word, but you'll get strange looks if you ask someone which file system he or she is using—miffis or hiffis. □

Are You Still In Search of Excellence?

Introducing:



Software for the pursuit of excellence.

"STELLA enables us to make the analysis of complex manufacturing systems understandable to our clients."

Partner, Deloitte, Haskins & Sells

"STELLA has raised the 'what iffing' capability in our strategic planning process to new heights."

VP, Sara Lee Corporation

"STELLA was great for analyzing alternative competitive strategies associated with a major new product introduction."

Product Manager, Procter and Gamble

"STELLA helps us to balance the factors that *satisfy* demand with the factors that *generate* demand."

Business Planning Analyst, Cray Research

"We have $2,000 mainframe process-control programs that can't do what STELLA does."

Director of Research, E.I. DuPont de Nemours

"STELLA is helping to create a common language for analyzing cross-functional issues . . . greatly enhancing our corporate learning process."

VP, Royal Dutch Shell

Price: $395 • VISA/MC Accepted • Available only for the Macintosh

For more information, call or write:

HIGH PERFORMANCE SYSTEMS

13 Dartmouth College Highway
Lyme, New Hampshire 03768
603-795-4857

See us at the San Francisco MACWORLD Expo, booth #938.

Circle 613 on reader service card

TechScriber

Integrated Desk-Top Publishing Application Combines Full-Page Layout, Document Formatting, Text Editing, Diagram Construction, Table Construction and Mathematical Expression Construction

Use TechScriber To Help You Produce:

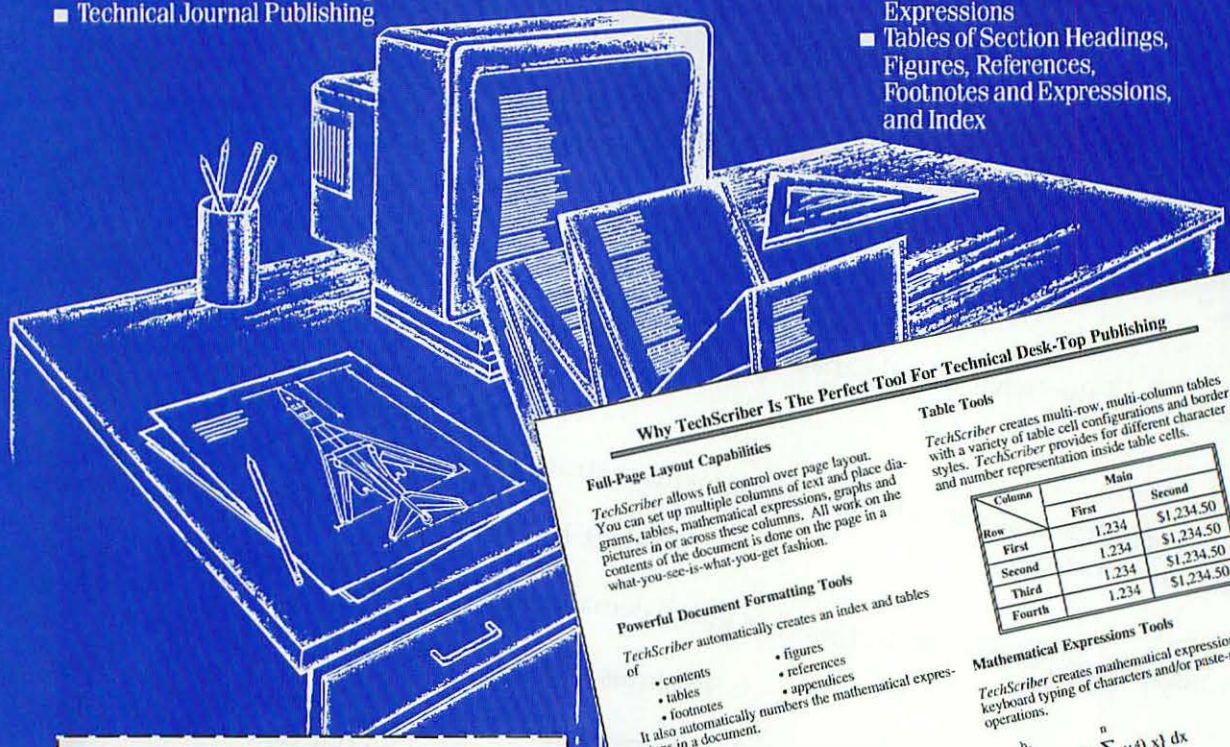
- Inter-Office Technical Memos
- Technical Proposals
- Scientific Articles
- Technical Books
- Theses and Dissertations
- Technical Letter Publishing
- Technical Manual Publishing
- Technical Journal Publishing

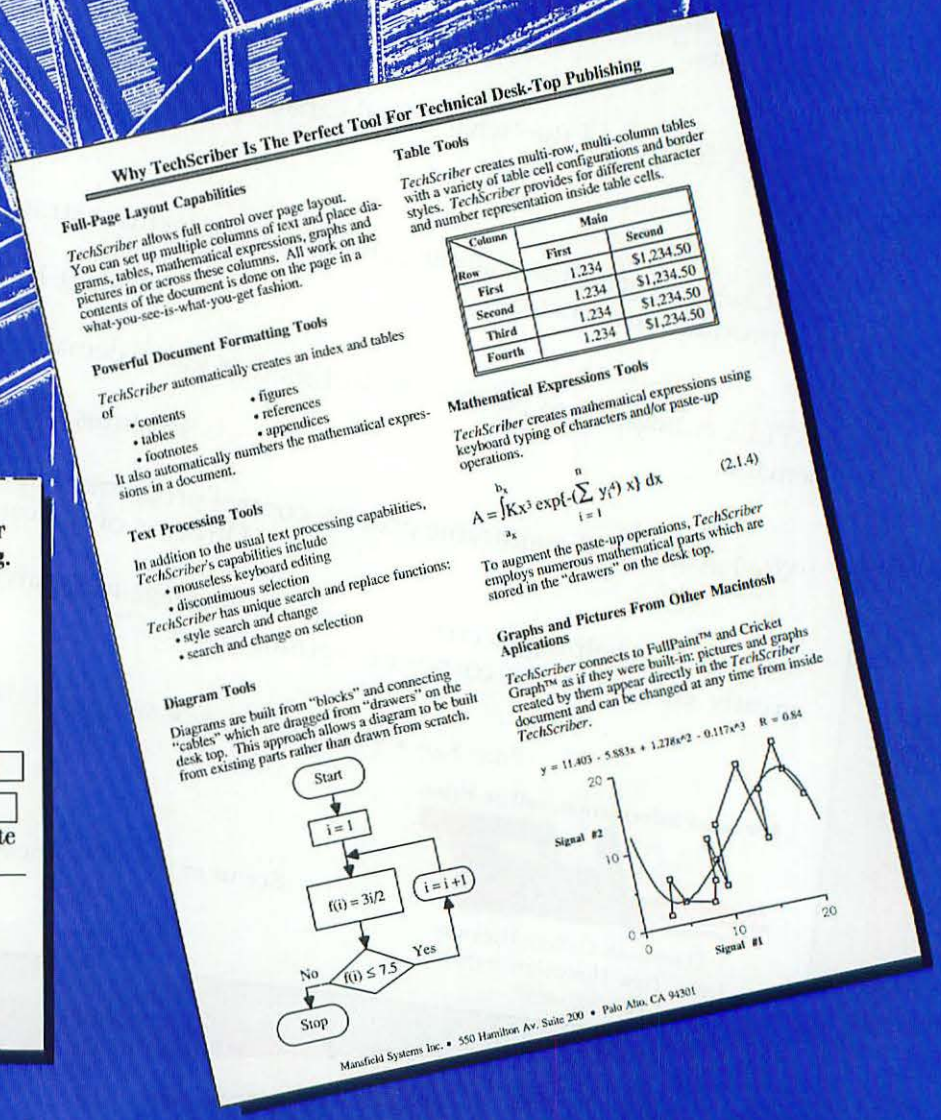
Combine From Other Macintosh™ Applications:

- Graphs
- Pictures

Get An Integrated Solution For the Creation Of:

- Layout
- Text
- Simple Diagrams, Technical Diagrams and Computer Flow-Charts
- Tables
- Complicated Mathematical Expressions
- Tables of Section Headings, Figures, References, Footnotes and Expressions, and Index





Why TechScriber Is The Perfect Tool For Technical Desk-Top Publishing

Full-Page Layout Capabilities

TechScriber allows full control over page layout. You can set up multiple columns of text and place diagrams, tables, mathematical expressions, graphs and pictures in or across these columns. All work on the contents of the document is done on the page in a what-you-see-is-what-you-get fashion.

Powerful Document Formatting Tools

TechScriber automatically creates an index and tables of

- contents
- tables
- footnotes
- figures
- references
- appendices

It also automatically numbers the mathematical expressions in a document.

Text Processing Tools

In addition to the usual text processing capabilities, *TechScriber*'s capabilities include

- mouseless keyboard editing
- discontinuous selection

TechScriber has unique search and replace functions:

- style search and change
- search and change on selection

Diagram Tools

Diagrams are built from "blocks" and connecting "cables" which are dragged from "drawers" on the desk top. This approach allows a diagram to be built from existing parts rather than drawn from scratch.

Table Tools

TechScriber creates multi-row, multi-column tables with a variety of table cell configurations and border styles. *TechScriber* provides for different character and number representation inside table cells.

Column / Row	Main	
	First	Second
First	1.234	$1,234.50
Second	1.234	$1,234.50
Third	1.234	$1,234.50
Fourth	1.234	$1,234.50

Mathematical Expressions Tools

TechScriber creates mathematical expressions using keyboard typing of characters and/or paste-up operations.

$$A = \int_{a_x}^{b_x} Kx^3 \exp\{-(\sum_{i=1}^{n} y(i)\, x\}\, dx \qquad (2.1.4)$$

To augment the paste-up operations, *TechScriber* employs numerous mathematical parts which are stored in the "drawers" on the desk top.

Graphs and Pictures From Other Macintosh Applications

TechScriber connects to FullPaint™ and Cricket Graph™ as if they were built-in: pictures and graphs created by them appear directly in the *TechScriber* document and can be changed at any time from inside *TechScriber*.

Mansfield Systems Inc. • 550 Hamilton Av. Suite 200 • Palo Alto, CA 94301

☐ **Send me TechScriber. The Word-Diagram-Table-Math Processor for the Macintosh Price: $395 + shipping.**
Shipping: In U.S. $5; Canada $12; Foreign $25; $ U.S. only

☐ **Send me a Demo Diskette.**
In U.S. & Canada $15; Foreign $25

☐ My check or money order for $_____ is enclosed.

☐ Charge my: ☐ Visa ☐ Mastercard

Account Number

Expiration Date

Signature: _____

Mail to: Mansfield Systems, Inc.
550 Hamilton Avenue, Suite 200
Palo Alto, California 94301

Order Toll Free: (800) 872-3332
In California: (800) 367-3332

Macintosh is a trademark licensed to Apple Computer, Inc.

Circle 595 on reader service card

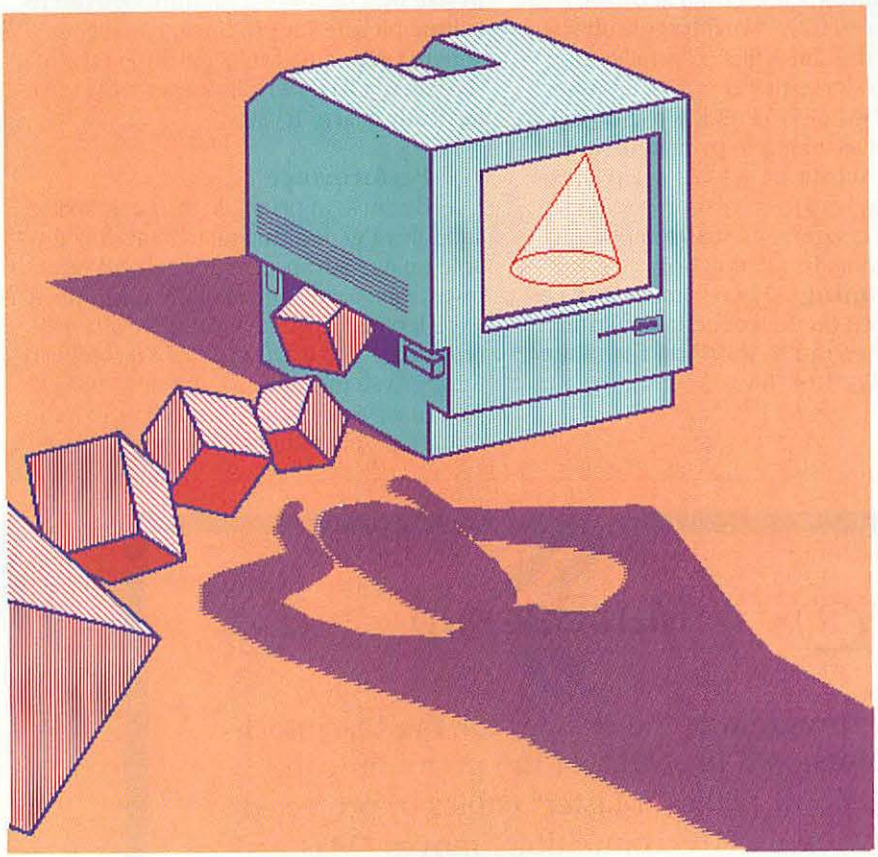
Insights on the LaserWriter

A clearinghouse of tips for handling pesky printing problems and generating high-quality laser printouts

by Charles Seiter and Daniel Ben-Horin

When Apple introduced the LaserWriter in 1985 (followed by the LaserWriter Plus in March 1986), it changed forever the print standard for computer users. The LaserWriter's multifont, fast, near-typeset-quality output became the standard against which other printers are measured, and usually found wanting. Proud machines of yesteryear—even the ImageWriter in Mac-based offices—have been relegated to the realm of quick and dirty jobs.

Tips for LaserWriter use tend to focus on a handful of problem areas. First, there can be small but annoying gaps between the LaserWriter output you expect and the output you actually get. Second, the power and flexibility of the LaserWriter lure advanced users into exploring ways of modifying and customizing output. Third, the occasional resemblance of the LaserWriter to a somewhat cranky office copier produces a variety of suggestions about paper and toners. We thank the customer service staffs at Apple, Aldus, and Green Mac (Ukiah, California) for dealing with our litany of complaints and questions collected from scores of users.



MICK WIGGINS

WYSIWHOOPS

The LaserWriter's deviation from strict What You See Is What You Get drives many users to distraction, particularly since they have been conditioned by the usually admirable fidelity of the ImageWriter in this regard. The acronym WYSIWHOOPS (What You See Is What Happens On Operating in PostScript) covers this category of near misses. Herewith please note some fixes, patches, and well-meaning advice.

Page Size If you pick out a 10 percent shading pattern for the whole printing area in a document page and send it to the LaserWriter, you won't get edge-to-edge printing. Not only will the image be a little smaller than you might expect (see "The Printed Page"), but you will also find that the print area is off center by about ⅛ inch. To work around this, study the output and modify your document margins accordingly. For example, if your footprint is ⅛ inch too far to the left, move the page margins ⅛ inch left on the formatting ruler.

Version 1.2 of *PageMaker* takes a further print-area bite of ⅜ inch from the margins. To restore the printed area to its original size, click the Maximum Print Area option.

Likewise, *MacDraw* coordinates are offset somewhat when they appear on paper. The upper left corner (*MacDraw* coordinate [0,0]) is inset about 1/10 inch from the top and left.

Use the page-size table to help you plan bleeds. Format your document in legal size, print it, and then trim the top and bottom to bring a pattern or rule all the way to the edge of the page.

Image/Laser Match Certain settings produce superimposable ImageWriter and LaserWriter output. This is especially valuable if your laser use takes place at a service bureau that charges by the hour or the page (get it right the first time!). In *MacWrite* 4.5, use Times 12 and the Tall Adjusted print setting and set margins on the ruler at 1 inch (left) and 7

(continues)

The Printed Page

Armed with the printing area sizes of these papers, you can produce top and bottom bleeds and other special effects with a little trial and error.

The Printed Page

Paper	Size	Maximum Printing Area
Letter	8.5 by 11 inches	8 by 10.9 inches
Legal	8.5 by 14 inches	6.75 by 12.5 inches
A4 (European)	8.3 by 11.7 inches	7.8 by 11.2 inches

inches (right). In *Microsoft Word* 1.05, use Times (9-14 point), 1 inch left and 1 inch right as page setup margins, 0 inch left and 6.5 inch right as screen ruler settings, Leading:Auto (from *Word* Paragraph Formats), and the Tall Adjusted print setting.

Also observe that this trick assumes no Font Substitution. Preview the document in Times and then print it in Times. In general, substituting fonts when laser-printing can lead to incorrect spacing, doom, and disgust. Resist all temptations to change fonts in a dialog box.

Dumping There simply isn't a ⌘-Shift-4 screen dump for the LaserWriter. You must revert to ⌘-Shift-3 and print the resulting *MacPaint* file.

Better Than What You See You can draw a full-size picture in *MacPaint,* move it over into *MacDraw,* and reduce it in size by a factor of four. Although the resulting picture (approximately 3 inches square) generally looks murky on the Mac screen, the LaserWriter output will be fantastically sharp. Try it!

Performance

Because in principle the LaserWriter is capable of generating nearly any conceivable image, advanced thinkers will want to investigate total control of the machine. An excellent place to start is the *PostScript Language Tutorial and Cookbook* from Adobe Systems (Addison-Wesley, 1985). The LaserWriter responds to PostScript instructions, and all files are translated into PostScript commands (which look rather like FORTH instructions) for printing. If you know how to "program" in PostScript, you can go far beyond simple document printouts.

Looking into PostScript If you hold down the ⌘, Shift, and F keys immediately after clicking OK when printing to the LaserWriter, you will generate an ASCII file called PostScript. This file contains the instructions the LaserWriter uses to print your document. If you examine the PostScript commands for a variety of small documents (a small amount of printing can correspond to a large PostScript file), you will soon develop a feeling for the way PostScript works. Try modifying files (the aforementioned book has some simple examples) and comparing outputs.

Printing Faster by Traveling Light One of the things you learn by examining PostScript files is that fancy stuff makes them quite cumbersome. There's an obvious trade-off involved, but if you opt for fewer flourishes, you give the LaserWriter some breathing room in memory and are rewarded with faster output (see

(continues)



MacBackup™



This program is the answer for the Macintosh professional in search of the premium copy system. It makes "Master" copies of protected software, is HFS compatible, moves "Masters" safely to hard drives **and** is the fastest, most reliable copy program on the market. **$49.95**

Also available:

SONY 3.5 DS Boxed	$18.95/10
SONY 3.5 DS Bulk	$14.90/10

1-800-482-4438 Outside New York

1-800-435-4438 In New York

Order by phone or mail. We accept MasterCard and Visa.
NY residents include sales tax. Shipping minimum $3.00

Roc Software, Inc., P.O. Box 4536, Ithaca NY 14852

Circle 621 on reader service card

MathWriter™

THE MASTER KEY TO MATHEMATICAL TYPESETTING WITH THE MACINTOSH™

- Complex mathematical equations composed with ease. Saves time and provides greater precision and flexibility for scientists, mathematicians and students who write equations and for designers who merge equations with text.
- A "what you see is what you get" editor. Eliminates the tedium and error of command memorization.
- Switcher is included.
- Fully supports output to Imagewriter and LaserWriter.
- Requires at least least 512K.

$$J_\nu(z)=\left(\frac{z}{2}\right)^\nu \sum_{k=0}^{\infty} \frac{(-z/4)^k}{k!\,\Gamma(\nu+k+1)}$$

$49.95

Includes US shipping.
NY residents include sales tax.
We accept check, money order
VISA and MasterCard.

Order direct from:
COOKE PUBLICATIONS,
P.O. Box 4448, Ithaca, New York 14852

Please print name of software licensee legibly.

MACINTOSH AND SWITCHER ARE REGISTERED TRADEMARKS OF APPLE COMPUTER, INC.
MATHWRITER IS A REGISTERED TRADEMARK OF COOKE PUBLICATIONS.

$39 Trial

Value Line's new software: For the complete investor.

Value Line's software lets you get the whole investment picture in clear focus.



Simply awesome —*T.J.M.*

Amazingly complete —*B.A.L.*

A quantum leap forward —*J.A.H., Jr.*

A valuable, easy-to-use, foolproof tool —*C.R.R.*

Well done and very useful—*R.S.E.*

Editor's Choice-PC *Magazine*

VALUE/SCREEN *Plus* packs a lot of investment power into one integrated investment package. ***Stock Selection:*** You can instantly screen the entire VALUE/SCREEN *Plus* database for all the stocks that meet your unique, demanding investment criteria. ***Stock Reports:*** You can get stock reports, just as fast. ***Portfolio Management:*** You can enter your own stock ownership information to create a powerful computer-driven portfolio. You can even track hypothetical investment portfolios to evaluate stock selection criteria. ***Report Generator:*** You can get formatted or customized reports up to 230 columns wide. ***Spreadsheet Files:*** You can load any of this data into spreadsheets.



Microsoft Excel and Jazz are among the popular spreadsheets to which VALUE/SCREEN *Plus* can be linked.

Excel is a trademark of Microsoft, Inc. Jazz is a trademark of Lotus Development Corp. VALUE/SCREEN *Plus* is a registered trademark of Value Line, Inc.

$39 Trial If you act right now, we'll send you the complete software package—which regularly sells for $95—for only $39. And we'll include 2 monthly data disks worth $29 each, *absolutely* free. There are no timesharing charges, since up-to-date data is mailed to you regularly on disk.

800-521-5257

☐ I have an Apple Macintosh, 512K or Plus, and want to take the $39 two-month trial.
☐ Please send information on the [ ] IBM or [ ] Apple version.
☐ My check for $39 is enclosed (NY residents, add sales tax)
☐ Please bill my (circle one)
Visa MasterCard American Express

Exp. Date____

Account#____

Signature____

Name____

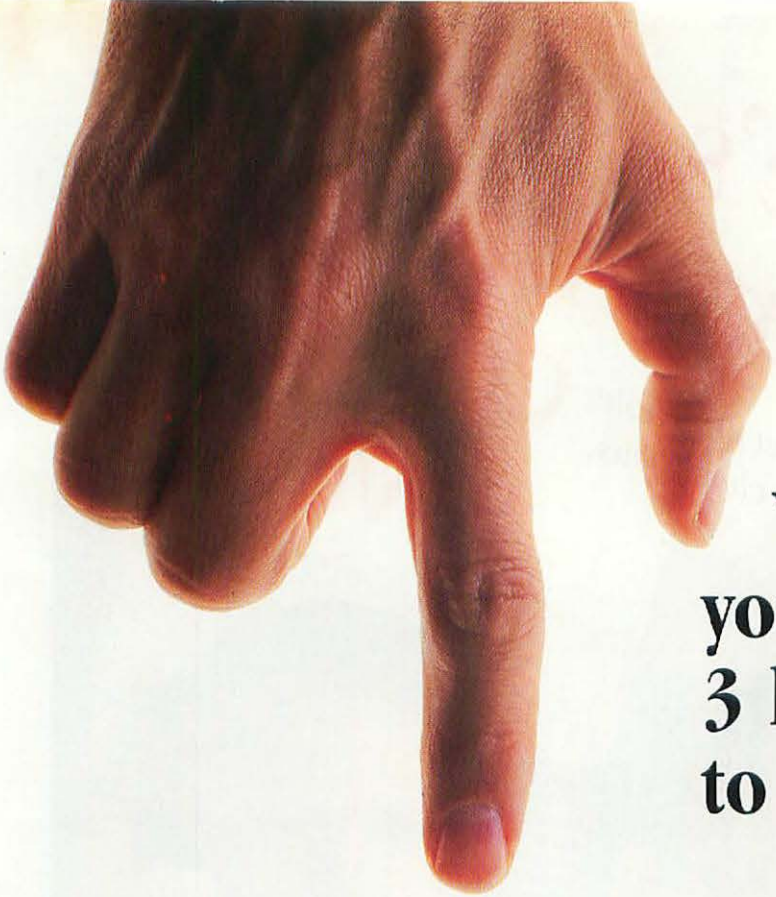
Address____ Dept.85RJ01

City, State, Zip____

Tax-deductible if used in managing your investments. Purchase is nonassignable.

Value Line Software
711 Third Avenue
NY NY 10017

Circle 591 on reader service card



You've put your finger on 3 key reasons to subscribe...

1 **SAVE OVER $23 A YEAR!** Your subscription means a handsome savings for you—almost 50% off the cover price.

2 **GET THE MOST FROM YOUR MAC!** Your money-saving subscription also insures a steady flow of the practical information you want—reviews of software and hardware you can rely on, new applications, techniques, and practical "how-to" tutorials.

3 **GET THE MACWORLD GUARANTEE!** We're so certain you'll get what you need—and more—from MACWORLD, we guarantee it! If for any reason you're not satisfied with MACWORLD, just let us know, and we'll promptly refund the cost of your subscription for every unmailed issue.

MACWORLD

The Macintosh™ Magazine

Save

$23.40
off the
~~$47.40~~
cover price

SUBSCRIBE NOW

YES! Please send me one year (12 monthly issues) of *Macworld* for only $24. I'll save $23.40 off the annual cover price of $47.40, a savings of almost 50%. (That's $6 off the regular subscription rate of $30.)

SAVE EVEN MORE!
☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

Name _____

Company _____

Address _____

City, State, Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires June 30, 1987.

4BB91

MACWORLD
The Macintosh™ Magazine

Order Now to Take Advantage of These Special Savings.

Call TOLL FREE: 800/524-3200

Visa and MasterCard Accepted!

SUBSCRIBE NOW

☐ **YES!** Please send me one year (12 monthly issues) of *Macworld* for only $24. I'll save $23.40 off the annual cover price of $47.40, a savings of almost 50%. (That's $6 off the regular subscription rate of $30.)

SAVE EVEN MORE!
☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

Name _____

Company _____

Address _____

City, State, Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires June 30, 1987.

4BB91

MACWORLD
The Macintosh™ Magazine

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666

"PostScript Insights"). Watch out for the following drag-inducing conditions.

- Large text (over 20 points).
- Lots of pattern shades or lines.
- Bit-mapped fonts with *PageMaker* or *Word*.
- Smoothing.
- Justified text.

More Hope for the Impatient

Consider either a software spooler or a hardware spooler. Spoolers provide a separate memory store for the document being printed, which frees your Mac for other tasks right away.

Fonts The original LaserWriter provided the Times, Helvetica, Courier, and Symbol fonts. The LaserWriter Plus adds Avant Garde, Bookman, Helvetica Narrow, New Century Schoolbook, Palatino, Zapf Chancery, and Zapf Dingbats (dingbats are mostly symbols for the printing trade). You may find to your delight that the following nonlaser fonts, printed directly from *MacWrite,* give very good results: Bodoni, Boston, Clean, Monaco, and Stuttgart. More rounded fonts, such as Ravenna, Script, and Venice, are much less satisfactory.

(continues)

The power of the press
belongs to those who own one.
- A. J. Liebling

❖ The
Power of the press
belongs to Those
Who own one. ▬

PostScript Insights

Changing fonts frequently and using extra-large type, smoothing, or justification slow printing because longer PostScript commands are required. The simple, single-font example had 44 lines of code in its PostScript file; the more elaborate version, with its patchwork of fonts, had 165 lines of PostScript code and reached the limits of the LaserWriter Plus's font memory.

Magical Speeds
Magical Prices

The MagicDrive



It's as simple as this. The Magic Hard Disk Drive delivers awesome speed, power and dependability for an inexpensive price. Just compare these costs and speeds:

	Magic Drive	Apple 800K	Apple H/D 20	SuperMac Data Frame
Open MacWrite	6.40sec.	12.60sec.	10.12sec.	7.80sec.
Close MacWrite	4.50	8.83	6.99	5.47
1-Open 20.7K Document	4.42	20.50	17.96	17.45
2-Save 20.7K Document	3.19	8.18	4.95	4.19
Open MacPaint	4.03	8.18	5.68	4.54
Close MacPaint	3.93	8.18	6.07	4.70
Retail Price	$699.00	$399.00	$1195.00	$1295.00
Price per Meg	34.90	450.00	60.00	64.80

Don't forget that the MagicDrive is guaranteed to last. It comes with a full one year warranty covering parts and labor and a 30-day money-back guarantee.

For European Sales and Service, contact: Megabyte AG
Hirschenplatz 3/CH-6215
Beromunster/Switzerland
tele: 045-513320/telex: 868679 skyo ch

Magic20	$ 699.00
Magic30	899.00
Magic65	1399.00
Magic235	3499.00

- Works with Macintosh Plus & 512K E.
- Free SCSI Cable
- Tests performed by Lockheed Macintosh User's Group
- Runs without a system cache.

Rabbit Industries
4505 Spicewood Springs Road
Suite 304
Austin, Texas 78759
512-343-0781

Circle 702 on reader service card

Although you can define your own typeface in PostScript, it's a tedious business. You may want to look into the additional fonts available directly from Adobe Systems (acquiring, in the process, Adobe's universally admired font-downloading program). Other developers, such as Casady Company and Century Software, market downloadable laser fonts (see "Putting on a Good Face," *Macworld,* July 1986). *Fontographer* from Altsys Corporation of Plano, Texas, also wins high marks for convenient font generation.

In the interest of aesthetics, we feel obliged to remark that the dearth of fonts is not usually a pressing problem; one of the telltale signs of amateurish desktop publishing is the use of too many fonts in one document.

Using Utilities With *LaserFeeder,* available on the main national Mac bulletin boards and through user groups, you can send PostScript files to a LaserWriter from a Mac over AppleTalk. This also means that PostScript files generated elsewhere (on a VAX, for example) can be sent to a Mac for laser printing.

ResEdit, the Mac resource editor, lets you define fully kerned characters. (Basically, kerning is adjusting the spacing of symbols for harmonious printed appearance–for example, fine-tuning the spacing of *A* and *V* in AVIATION.) For scientific notation, this allows overbars, hats, and superscripts above any symbol. Keep an eye out, though, for new word processing tools that might save you the trouble of painstakingly kerning all the character pairs by hand.

Mechanicals

After all known software glitches have been fixed and all possible fonts designed, there remains the primordial issue of marking paper with black stuff. For paper, a set of consensus recommendations has emerged over the last year, and a few tips about toner cartridges have proved valuable.

The Paper Chase The standard "good" paper is Laser Plus, a 24-pound paper with a smooth finish from Hammermill of Erie, Pennsylvania. Other favorites include Dello Opaque English Finish from the James River Corporation of Newark, Delaware, and 70-pound Smooth Opaque from Simpson of San Francisco. For paste-up originals you need paper that stands up to waxers: for example, Quintessence Dull from Northwest Paper Company of Cloquet, Minnesota, and–recommended by reader Josephine R. Gibson–Patina from S. D. Warren of Boston. The label stocks recommended by Satori Software, which puts out *Bulk Mailer,* are Avery 4220 (three-up) and 4221 (two-up), which can also be ordered in custom sizes.

If you change weights of paper stock frequently, you are asking for skewing problems–lines printed at an angle because of misfeeding. For optimum results, have the paper feeder "squared" for paper of a respectable weight (at least 20 pounds) when the printer is first set up and resist the temptation to economize by running cheaper, lighter paper through the machine. Alternatively, have a qualified service person resquare–that is, make fine adjustments for thickness so the paper feeds squarely into the printer–before changing weights of paper. Because the thickness adjustments are easily undone, you might think twice about laser-printing mailing labels. In fact, one print shop bans labels on the LaserWriter but makes a

(continues)

It's not just a dream anymore.

Desktop Publishers can compose an entire page at one time, in actual size resolution.

Corporations can examine six times the number of figures in a single glance.

Architects and designers can visualize whole concepts, not just portions of ideas.

And it's all because of MEGASCREEN™.

MegaScreen™ allows you to view up to six times the information you now see on your Macintosh Plus computer. You can access up to 1024 x 1024 resolution -- not 512 x 342 -- all at once.

MegaScreen™ turns Macintosh Plus into a super workstation with its 19" diagonal high-resolution monitor and flexible software. Also, it lets you to create sharp videotapes for training sessions and demonstrations.

Open your eyes.
See what you've been missing.

Macintosh Plus is a product of Apple Computer, Inc. Macintosh is a registered trademark of McIntosh Laboratory, Inc., and is being used with express permission of its owner. PageMaker is a registered trademark of Aldus Corporation.

MEGASCREEN



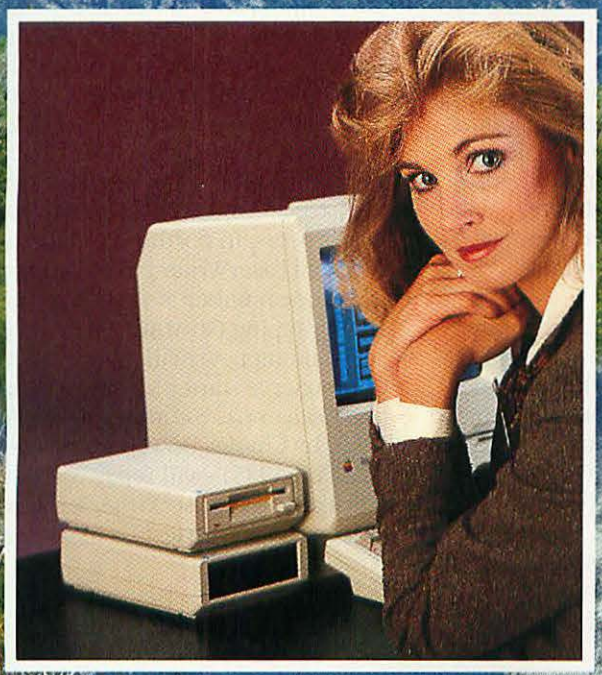
micrographic
IMAGES

20954 OSBORNE ST., CANOGA PARK, CA 91304
(818) 407-0571 Telex: 650/288-0349 MCIMAIL

Available now from your local Apple dealer.

Circle 235 on reader service card

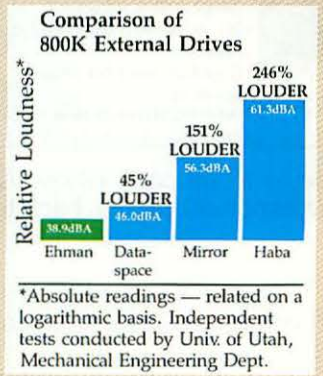
Power and Elegance



Finally, disk drives that offer the advanced power and elegant design at the price you've been waiting for.

800K Disk Drive

- *Totally Silent*
- LED (so you know the silent drive is running!)



*Absolute readings — related on a logarithmic basis. Independent tests conducted by Univ. of Utah, Mechanical Engineering Dept.

- Manual eject button
- Compatible with old and new Mac ROMs — use on standard 512K
- Compact case matches Mac aesthetics
- *12 month warranty* (four times Apples!)

20MB and 40MB SCSI Hard Disk Drives

- Smallest drives available — completely portable
- Head-locking safety feature, rated 60 Gs
- Mean failure time of 25000 hrs.
- SCSI port available for 512K Macs
- *12 month warranty*





Ehman 800 *double-sided external drive and* Ehman 20HD *20MB SCSI hard drive. State-of-the-art design and performance. Completely silent, completely portable. With 12 month warranty.*

Ehman Engineering — The Dependable People

Like hundreds of companies have for years, you can depend on Ehman Engineering for the finest Macintosh peripherals at unbeatable prices. (Ask about our top-quality memory upgrades and 512K SCSI port for the Mac.) We take pride in our work, which is why all Ehman products are elegantly designed inside and out, and come with a 12-month warranty. And we take care of our customers, which is why you'll always find a friendly, knowledgeable person on the other end of our 800 number.

Call us today for details on the complete Ehman product line. We're looking forward to talking with you.

EHMAN ENGINEERING, INC.

115 Apache Drive, Evanston, WY 82930

(800)257-1666

Macintosh and Macintosh Plus are trademarks licensed to Apple Computer, Inc.
Ehman 800, Ehman 20HD and Ehman 40HD are trademarks of Ehman Engineering, Inc.

sharp laser master of the list on paper in the LaserWriter and then copies it onto labels on the shop's Xerox machine.

Looking Forward Users report good results for overhead projectors with 3M transparency film type 501. Type 503 melts in the LaserWriter, which settles the "which film?" issue pretty definitely.

Setting the Right Toner The dreary reality appears to be that some lucky cartridges produce very good black areas and some just don't. This appears to be a result of delicate thermal and high-voltage manufacturing variables in the cartridge design. You can try breaking in a new cartridge by turning the Print Density setting down and running 100 pages or so through the machine. Some professionals identify especially good "superblack" cartridges and set them aside for critical documents and final artwork. You can also try tilting elderly, fading cartridges according to the procedure outlined hopefully in the manual. It is not likely that good-as-new recharged cartridges will become widely available since several other cartridge components besides toner are used up in printing.

Oddments

The LaserWriter is nearly the most complex piece of consumer hardware ever presented to the general public, and as a result it has some idiosyncrasies. Virtually all of these have been overcome or turned to advantage by ingenious Mac users.

Copy-Protection Snags *ThinkTank*'s copy-protection scheme can interfere with LaserWriter printing. The way around this is to launch *ThinkTank* from *Switcher.* If *Switcher* has a LaserWriter system installed on its disk, *ThinkTank* spools its print jobs to the LaserWriter (use high-resolution mode).

Systems and PageMaker Make sure you use System 3.2 with *PageMaker.* Versions 3.0 and 3.1.1 can corrupt documents.

Reheat and Serve Unhappily, some early LaserWriter Plus upgrade ROM can be a little flaky. Letting the machine warm up for 15 minutes, then switching it off and on, may circumvent this problem, since a warmed-up ROM is more likely to initialize properly.

More on Flakiness In *PageMaker,* sometimes parts of Aldus's font dictionary aren't completely removed from RAM when starting a new printout. The only correction method is to switch the LaserWriter off, then on, and wait 3 minutes.

United We Stand

We've referred previously to bulletin boards and user groups, and we'll sign off on that theme. Some folks are put off by the technoid aura of the hard-core BBS network, but the fact is that laser printing—and desktop publishing in general—is rapidly evolving, cutting-edge territory. Aldus and Apple monitor the bulletin boards, so why shouldn't you? The people who inhabit this ether are friendly and love to instruct. Any local Mac board has LaserWriter users. In northern California, there's a special LaserWriter bulletin board; its telephone number is 415/261-4813. Nationally, try typing Go MAUG at the CompuServe prompt. A small investment in a CompuServe starter kit—or in a manual like *How to Get the Most Out of CompuServe* by Charles Bowen and David Peyton (Bantam, 1985)—will repay you infinitely in quick access to LaserWriter explorers (not to mention Mac maestros in general). □

THE EASY SOLUTION TO THE HARD DISK DECISION.

EASY DRIVE FOR MACINTOSH.

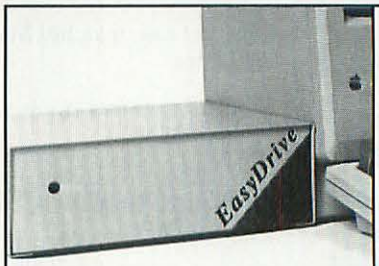
Confused about which hard drive to buy? You and thousands of other Macintosh owners are faced with endless comparisons, constant head scratching, and the same difficult decision. So we developed the easy solution. The Easy Drive for Macintosh.

A hard disk that incorporates every single feature a Macintosh hard drive should have. Without the high price you'd expect.

IT'S FAST. The Easy Drive is SCSI based so it's fast - 16 times faster than floppy port drives, and five times faster than other fixed drive systems.

IT'S BIG. From 20 to 60 megabytes of storage, with unlimited expansion potential. And tape back-up systems for data protection are on the way.

IT'S COMPACT. The Easy Drive is designed to fit right under the Macintosh. So you get more disk space to work with, and more desk space to work on.



- Formatted at factory for "plug and play" operation
- SCSI interface makes Easy Drive extremely fast
- Data transfer rates 5 times faster than other systems
- Compatible with all Mac Plus peripherals & software
- 20 - 60 MB with unlimited expansion capability
- Boot from fixed disk drive on power-up
- Add'l SCSI port for other SCSI devices
- Includes Easy Drive utility disk software

IT'S RELIABLE. Made by a company whose Apple peripheral and hard drive experience dates back to the original Apple II.

IT'S AFFORDABLE. Though it's loaded with features, Easy Drive still comes at a price that isn't hard to swallow.

Easy Drive. The E-Z solution to the hard disk decision.

DCC Systems
Dealer Inquiries Invited

1525-B W. Orange Grove Ave.
Orange, CA 92668 (714) 771-7851
Telex 4990895 Computerstop LSA

Circle 584 on reader service card

OMNI-READER™

NOW YOUR COMPUTER CAN READ. A REVOLUTION IN TAKING WORDS FROM PAGE TO COMPUTER.

WAS ~~$799~~
NOW $199*

* LIMITED TIME ONLY
FREIGHT PREPAID ANYWHERE
IN THE CONTINENTAL U.S.A.

PC MAGAZINE PRODUCT OF '85

WORD PROCESSOR AND COMPUTER COMPATIBILITY.
The OMNI-READER can read text into most word processors, micro and personal computers. It attaches through a Serial RS232C interface as easily as a modem.

TYPEFACE QUALITY.
OMNI-READER has the ability to read letter quality text that has been printed on a letter quality printer or type writer in one of the four following typefaces.

TYPEFACE RECOGNITION.
The OMNI-READER can read four of the most commonly used typefaces: Courier 10, Courier 12, Letter Gothic and Prestige Elite.

MANUAL OPERATION.
Alpha or numeric print is scanned line by line by moving the reading head along the text. Capable of scanning both forwards and backwards, the reading head can be used to input all or selected portions of text.

GUIDE RULE. (pat. applied for)
A specially engineered guide rule makes it easy to align text. Because of the unique clock track, the reading head can be moved at variable speed and still read text. Scan time 2-3 seconds a line.

Each OMNI-READER comes with I.B.M. PC/Compatible or Apple MacIntosh software - at no extra charge. Interface Cable available for $16.00 extra. Specify I.B.M. or MacIntosh.



30 Day UNCONDITIONAL Replacement Warranty.

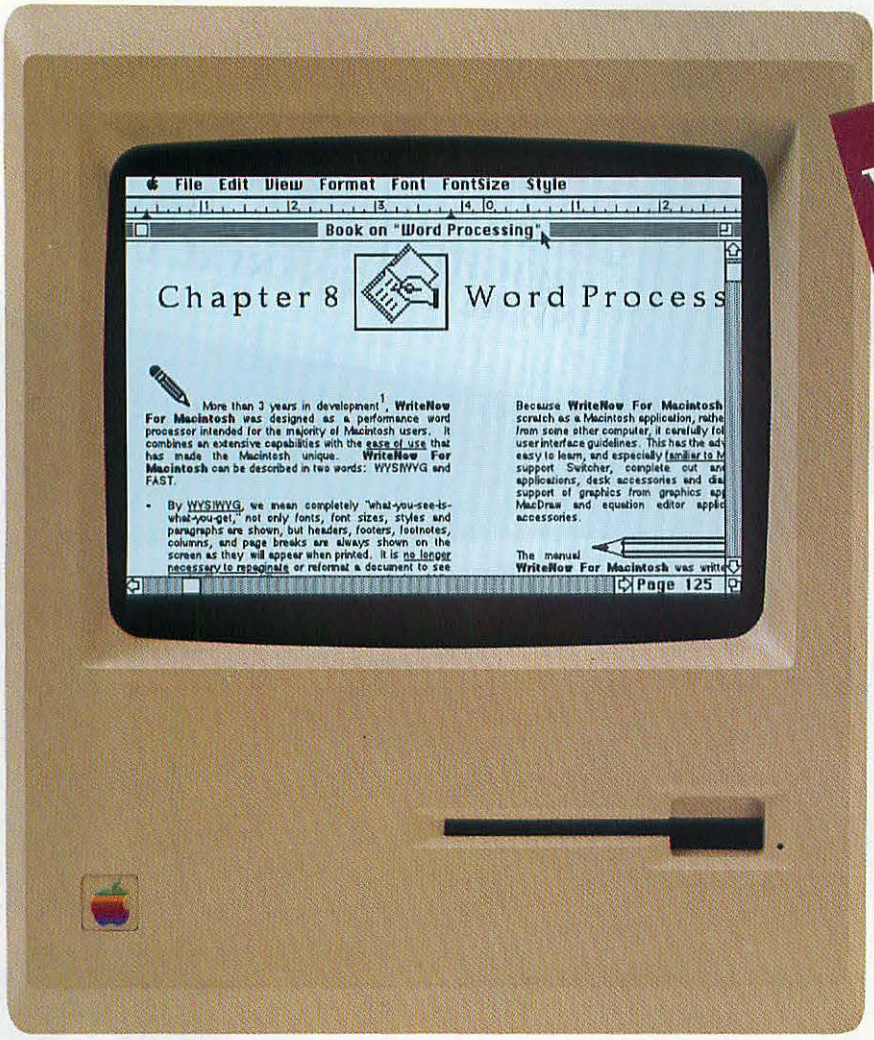
TO ORDER PLEASE CALL
TOLL FREE 1-800-523-4898
IN TEXAS 1-800-722-6013
TECH. ASST. 817-589-0313

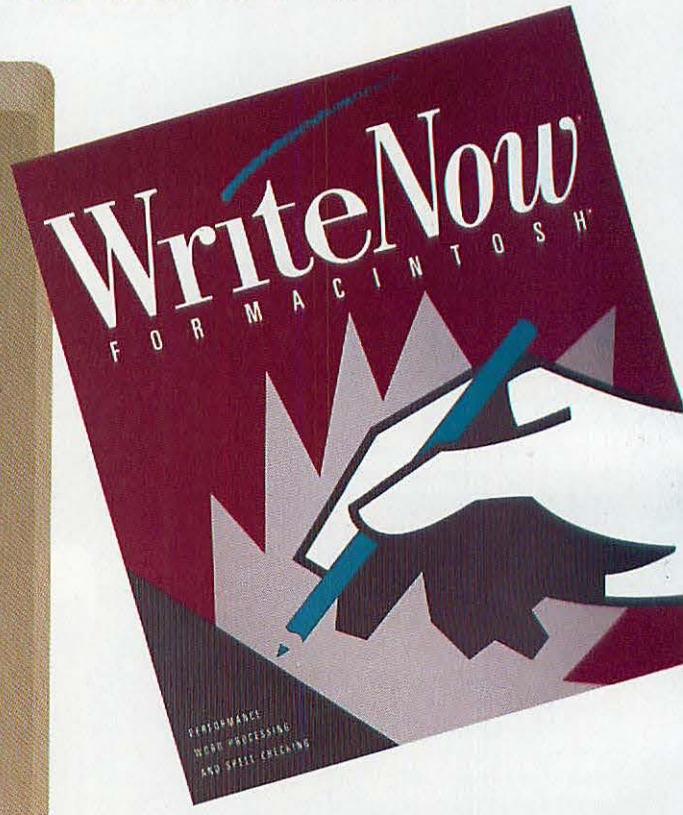
Accepting major credit cards - C.O.D.: Visa, Master Card, and American Express or send money order or check to:

G.A.S. INTERNATIONAL, INC.
P.O. BOX 1282, EULESS, TEXAS 76040

Circle 572 on reader service card

Performance Word Processing is here...





"This is the word processor that we designed and built Macintosh for."

Steve Jobs

Introducing WriteNow™ For Macintosh, the next step in word processing. WriteNow For Macintosh combines the power you would expect from a dedicated word processing system with the ease of operation that you're used to with MacWrite.

□ **Performance.**
The program is fast. Very fast. *Especially with large documents.* Saving, scrolling, finding and replacing, and printing happen *lightning-fast.* Regardless of document size, repagination is automatic and reformatting is instant.

□ **On-Screen Multiple Columns.**
You can do true *WYSIWYG* (What-You-See-Is-What-You-Get) editing in *one, two, three, or four columns* directly on-screen. Page breaks and characters from 4-127 points are displayed on-screen as well.

□ **50,000 Word Spelling Checker.**
A fast, on-line 50,000 word spelling checker is included. You can add or delete words and create "personalized" dictionaries. The spelling checker also has a handy "guess" feature that recommends the correct spelling of misspelled words.

□ **Headers, Footers, and Footnotes.**
Now you can display a unique header and footer for each page. Footnotes can be automatically numbered and edited on-screen as well.

□ **Unlimited Open Documents.**
Open as many documents as memory allows, making cutting, pasting, or reviewing between windows a breeze.

□ **Embedded Graphics.**
Graphics images can be part of a sentence, part of a paragraph, or a separate paragraph, and can be proportionally or freely sized.

And Much More.

To learn more, contact your local computer dealer today.

Suggested Retail: $175
Min. Requirement: Runs on any Macintosh. (Macintosh 512K or larger recommended for spell checking.)

T/Maker®

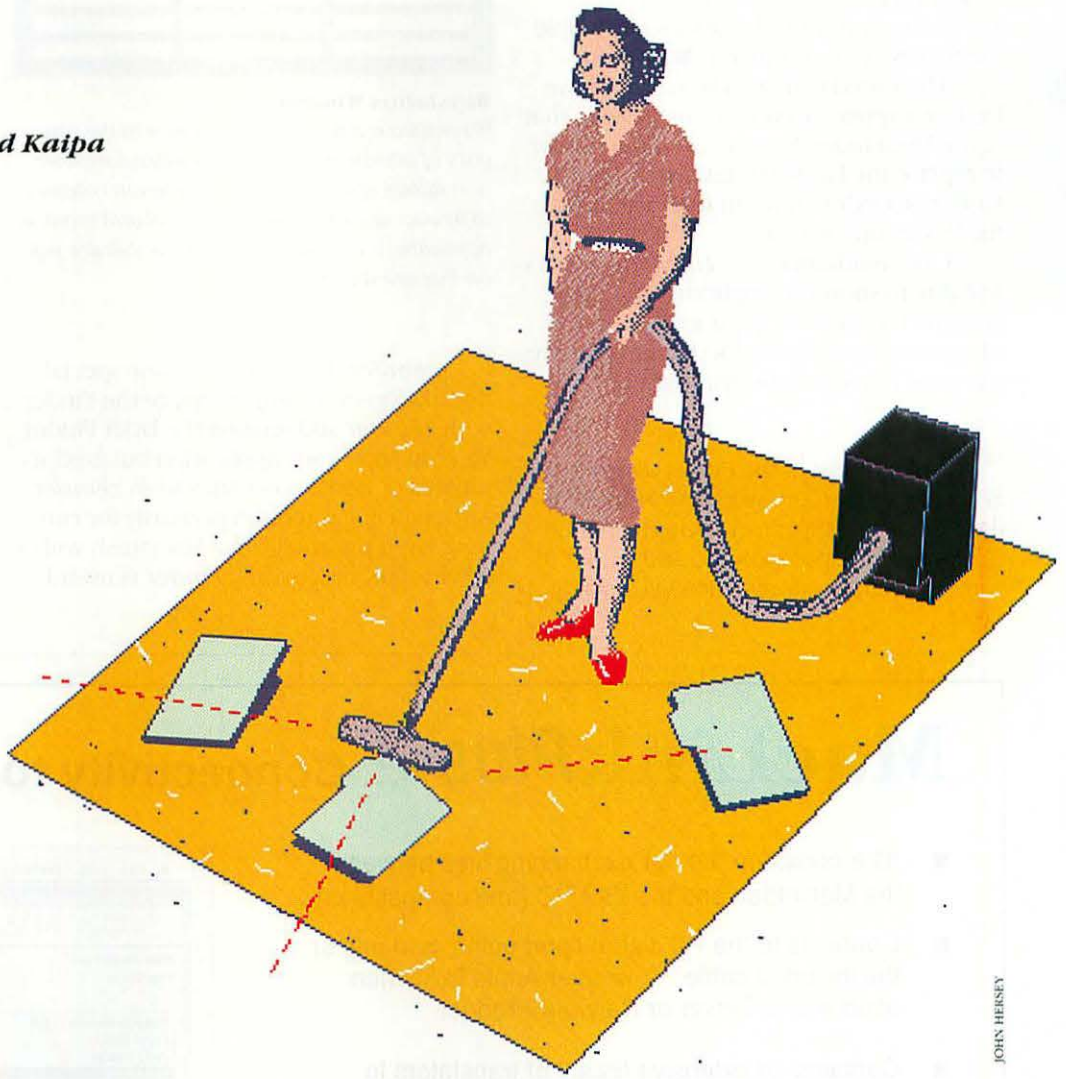
T/Maker Company
1973 Landings Drive,
Mt. View, CA 94043
(415) 962-0195

T/Maker is a registered trademark of T/Maker Co. WriteNow is a trademark of Airus, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. MacWrite is a trademark of Apple Computer, Inc.

Mac Desktop Tools

Want to save time and disk space? Take a look at ways to avoid the Finder.

by Prasad Kaipa



JOHN HERSEY

Although much can be said for the Mac's desktop analogy, for the most part it's the desktop that's behind the delay when you quit an application. By avoiding the Finder, whose job it is to create the desktop, you can save time. Many alternatives to the Finder speed up tasks like changing from one application to another and even let you copy and delete files from within an application. And because all the alternatives are less than half the size of the Finder, you can save valuable disk space.

In addition to building the desktop, the Finder keeps track of the files and saves information such as which icons to display and the positions of any open windows. The Finder acts as a sort of desktop administrator, helping you manage files and disks. For example, tasks like renaming, duplicating, and trashing files and renaming and ejecting disks all come under the Finder's jurisdiction.

As long as you're at the desktop level, the Finder runs in the Mac's RAM. When you open a document or an application, the Finder launches the application and relinquishes its own space. When you quit the application, the Finder rebuilds the desktop and resumes running.

Normally, the time it takes the Finder to rebuild the desktop when you quit an application is tolerable. However, when you add a hard disk, the number of files grows, increasing the time it takes to return to the desktop. One way around the Finder delay is the MiniFinder, which is a part of the Finder (versions 4.1 and later).

The MiniFinder

The MiniFinder replaces the Finder's desktop with a window containing up to 12 documents and applications. It won't let you rearrange the positions of the document or application icons as the Finder does; however, you can open items directly. The MiniFinder's speed is evident when you quit an application—you return to the MiniFinder in a fraction of the time it takes to return to the Finder.

While the MiniFinder lets you move more quickly from one application to another, you lose the capability to view all the files and folders on the desktop. Furthermore, you can access desk accessories only from within applications.

To access documents and applications that don't appear in the MiniFinder's window, you can either choose Open Other and select the file from the scrollable list or return to the Finder. While it is possible to circumvent the 12-file limit by building a hierarchy of MiniFinder windows (see "A Hierarchy and 20 Megabytes," January 1986), removing and replacing applications can be tedious.

(continues)

Tiny Finder

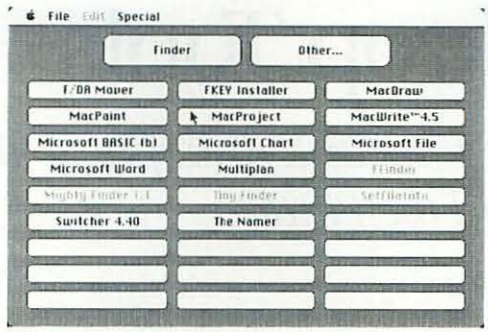
Tiny Finder is a public domain program available from user groups and bulletin board systems. You don't need to install applications as you do with the MiniFinder—all the applications on the start-up disk are always accessible. You can freely add and delete applications, as well as access desk accessories and function-key commands, called F-keys; for example, the Save Screen command (⌘-Shift-3).

The speed with which you can move between applications is comparable to that of the MiniFinder. You can use *Tiny Finder* to replace the Finder by naming it MiniFinder or Finder, or it can reside alongside the Finder on the disk.

One disadvantage of *Tiny Finder* is its inability to show the applications by icon; only the file names appear in the window. Also, you cannot open documents directly; you must first open the application.

zFinder

The smallest of the Finder alternatives, *zFinder* was written by Joel McNamara at the University of Utah and is in the public domain. It occupies only 1K, and with it you can open any application via a dialog box.



Waystation Window

Waystation *is a hands-down winner in the category of alternate Finders. This shareware selection allows applications from different volumes to be accessed and is easy to install and remove. Applications contained in volumes that are not on line are shown in gray.*

zFinder doesn't require any special installation—you simply replace the Finder with *zFinder* and rename the latter Finder. You can access any application but no documents or desk accessories from *zFinder*. Although it was written primarily for running large programs on a Macintosh with a single 400K disk drive, *zFinder* is useful whenever you're short on disk space.

Waystation

Waystation is offered as shareware—you send $10 to the developer if you find the program useful. The current version (2.3) lets you access up to 27 applications, surpassing the MiniFinder's 12. And you can easily add or remove applications.

Unlike *Tiny Finder* and *zFinder*, *Waystation* displays the application names in a full-screen window rather than in a dialog box (see "Waystation Window"). While you can open any of the 27 applications and access desk accessories and F-keys from the *Waystation* window, you can't access documents directly. The Other option lets you access applications other than those installed; alternatively, you can go to the Finder.

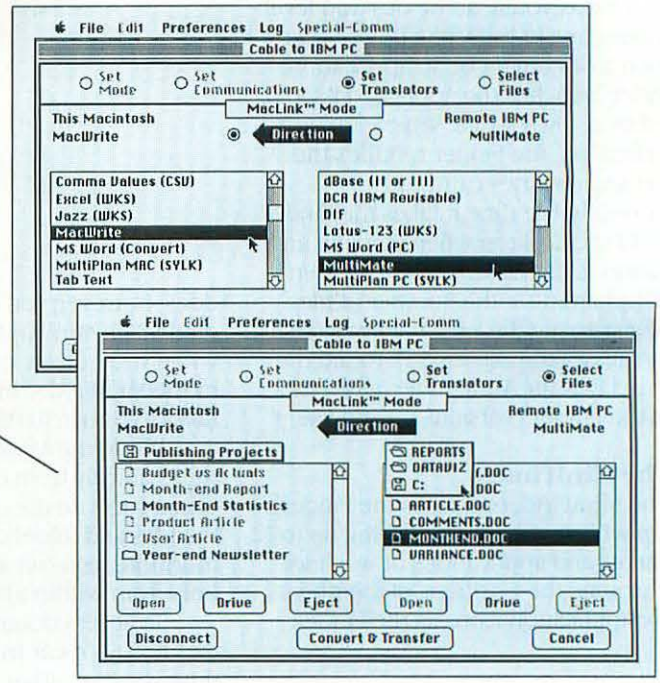
Waystation includes a feature not found in the other Finder alternatives. If 2 minutes pass with no mouse or keyboard activity, *Waystation* blanks the screen.

Waystation is incompatible with some desk accessories and electronic mail programs, such as *inBox*. If you move an application from one folder to another, you

(continues)

MacLink*Plus*™ ... Connectivity to the IBM PC *plus* ...

- Its a complete "kit" for exchanging files between the Macintosh and the IBM PC (and compatibles)
- Connects to the PC's serial port using modems or the included cable . . . or over AppleTalk when used with a Server or Network Product
- Contains an extensive library of translators to convert word processing formats, spreadsheets and data base information
- Full visibility into remote disks and directories
- TTY terminal emulator for general communications
- $195 includes Macintosh software, PC software, built-in translators, manual and cable
- Wang and NBI options available



DataViz Inc.

16 Winfield St. • Norwalk, CT 06855 • 203-866-4944

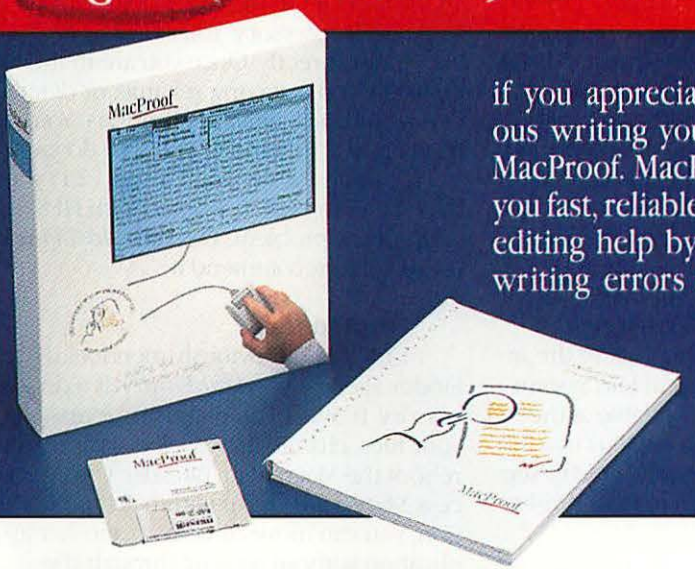
See Us at Macworld Expo Booth #1308

Circle 281 on reader service card

No More MacStakes With MacProof™!

Your writing will be righter (more correct) with MacProof.

MacProof software from ALP Systems can make you a better writer by finding errors or problem areas in your documents. Whether you are in a business or in a classroom, if you appreciate conscientious writing you'll appreciate MacProof. MacProof will give you fast, reliable and impartial editing help by checking for writing errors in four areas.



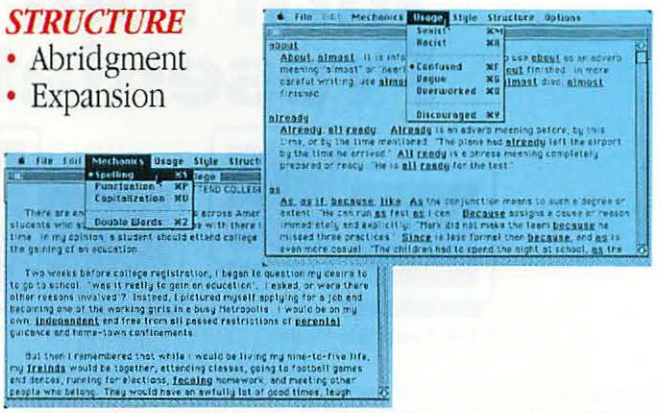
"BEFORE WE SING IT, WE RIGHT IT FIRST WITH MacProof."
The Oak Ridge Boys®

MECHANICS
- Spelling
- Punctuation
- Capitalization
- Double Words

STYLE
- "Be" Verbs
- Nominalizations

USAGE
- Sexist Language
- Racist Expressions
- Confused Words
- Vague Words & Phrases
- Overworked Phrases & Expressions
- Discouraged Expressions

STRUCTURE
- Abridgment
- Expansion



Automated Language Processing Systems

Breaking the Language Barrier

Available in Network and Standalone Versions.

"MacProof can make you a better writer."
Dr. T. H. Bell
Former U.S. Secretary of Education
September, 1986

Suggested Retail Price:
195.50
(Not Copy Protected)

Distributor Inquiries Welcome.

U.S. Headquarters
ALP Systems, Inc.
190 West 800 North
Provo, Utah 84604
Telephone: 1-800-354-5656
Telephone: 1-801-375-0090
Telex: 453-195 ALPS PRVO
Telefax: 1-801-375-7217

European Headquarters
ALP Systems, S.A.
Route de Boudry 14
CH-2016 Cortaillod/Neuchâtel
Switzerland
Telephone: 41.38.44.21.11
Telex: 952-751
Telefax: 41.38.42.11.85

MacProof is a trademark of Automated Language Processing Systems, Inc.

Circle 610 on reader service card

must remove and reinstall it in *Waystation*.

I found that the best way to work with *Waystation* is to rename it MiniFinder and leave it in the System Folder so that when you quit an application, you return to *Waystation*.

Mighty Finder

With the feature-laden *Mighty Finder*, you can display all the files in any mounted volume, select and view files, or eject disks. You can view file information such as file size, creation date, and modification date. In addition, you can edit the file's type and creator and see whether the file is invisible or locked or if its bundle bit is set.

Like the Finder, the 14K *Mighty Finder* lets you launch applications, copy and rename files, and use F-key commands. But it won't let you access desk accessories. Because version 1.1 was created before the introduction of the Hierarchical File System (HFS), it shows only files available at the desktop level. If you use a Mac Plus or a 512K Enhanced, you will not be able to see files within folders. For this reason, *Mighty Finder* is for 128K or 512K Mac owners only.

FlashFinder

FlashFinder from Unicom is one of the few Finder alternatives available commercially. *FlashFinder* presents you with a dialog box from which you can launch an application, go to the file manager, or select a desk accessory. You can also go to the Finder directly. Once you are in the file manager, you can copy, rename, or delete files as well as launch applications. You can even use the Edit menu and shut down.

Though the version I tested (2.1) was developed in 1985, it worked with HFS without any problem. Overall, *FlashFinder* is fast, and I recommend it.

SkipFinder

Unlike the previously mentioned Finder alternatives, *SkipFinder* is a desk accessory. It offers commands to access all your files, change drives, eject a disk, and reboot the Macintosh. Because you can access *SkipFinder* from within an application, you can move directly to another application without passing through the Finder. While *SkipFinder* is slower than the MiniFinder, it's much faster than the Finder for switching applications.

Q&D Filer

Q&D Filer is included as a desk accessory with *Quick and Dirty Utilities Volume 1* from Dreams of the Phoenix. *Q&D Filer* lets you bypass the Finder and go directly to another application. Unfortunately, if you transfer to another application without first closing the document you're working on, you lose the file.

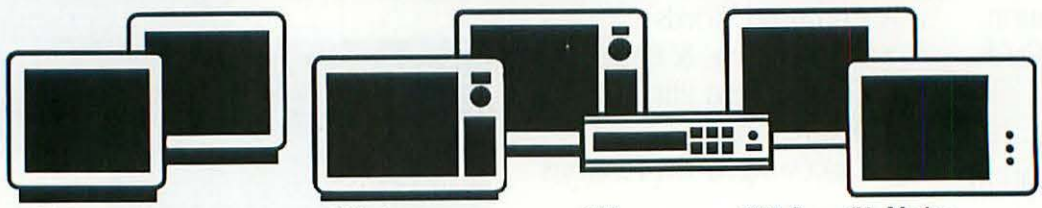
Q&D Filer also includes file management functions. You can copy, delete, and rename files, as well as get information on files, disk space, and free memory. Printing a text document from within an application is also possible.

Managing Files with DAs and F-keys

Several desk accessories and F-keys let you copy and delete files and check disk space from within an application (see "File-Management Desk Accessories"). Others let you compact memory, check free mem-

(continues)

Turn Your Mac Into A Presentation Center



NTSC Compatible Monitor | TV Monitor | VCR (VHS & Beta) | IBM Compatible Monitor

The Mac Video Scan Converter enables video data from the Mac or Mac Plus to be simultaneously presented on a variety of low cost or high performance displays including NTSC or IBM monitors, TVs and VCRs.

It is intended for use in audio/visual displays such as classroom demos or to provide a convenient portable demo by storing the presentation on a video tape for use with a VCR.

An easy installation kit is available and requires no soldering. Installation will not void Apple Warranty.

The unit features:

- **Freeze-frame screen memory**
- **Video frame advance**
- **Inverse video**
- **Compatibility with all Mac Software**

Display Device	Video Output	Typical number of devices per output*
NTSC Compatible Monitor	Composite/ NTSC Video	10 Monitors
TV Monitor**	Composite/ NTSC Video	10 Monitors
VCR** (VHS & Beta)	Composite/ NTSC Video	1 VCR
IBM Compatible Monitor	IBM Compatible Video	5 Monitors
High Speed Compatible Monitor (22.25 KHZ Horizontal scan rate)	High Speed Composite Video	10 Monitors
Color Monitor (RGB)	RGB Video	5 Monitors

*Maximum number of devices per output is a function of device type and impedance.

**May require use of RF Modulator.

Note: The two Composite/NTSC outputs are identical.

Each output will drive a number of specific display types (please see chart on the left) and will operate simultaneously.

Distributor and Dealer inquiries invited.

For further information please call:

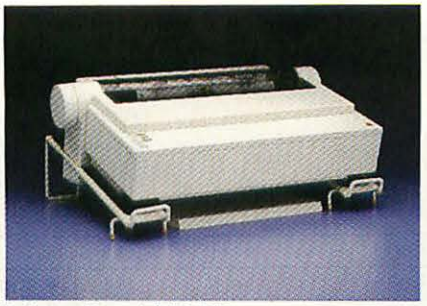
N² PRODUCTS, INC.

2401 Qume Dr.
San Jose, CA 95131
408 434-6488 **619 243-3632**

Circle 583 on reader service card



System Saver Mac $99.95



Printer Stand $19.95



Copy Stand $29.95



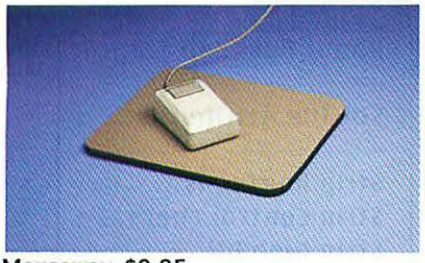
Tilt/Swivel, $34.95



Mouse Cleaning Kit with Pocket, $24.95



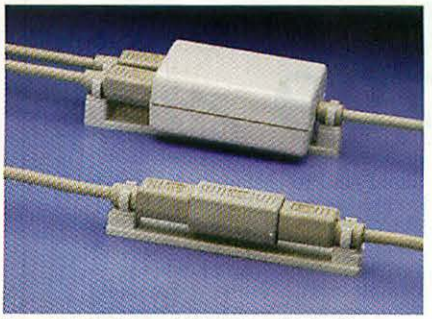
Mouse Pocket, $9.95



Mouseway, $9.95



A-B Box, $99.95



AppleTalk Clips $13.75 to $25.00



Circular Polarizing Filter, $49.95



Disk Drive Cleaning Kit, $29.95



Dust Covers, $9.95 to $13.75

Kensington has a solution for every Macintosh™ problem. Maccessories.®

A whole family of enhancement products for the Macintosh.

You'll find the perfect solution for every problem. From the complete power organization, surge protection and cooling of System Saver® Mac to the simple, convenience of AppleTalk™ Clips. From the smooth surface of the Mouseway to the comfortable relief of a Tilt/Swivel or Circular Polarizing Filter.

Of course, the best solution to a problem is to prevent it in the first place. That's why we offer a complete line of Cleaning Kits and Dust Covers.

We'll even put a shine on your correspondence with our bit-mapped Type Fonts, styled after popular type faces like Helvetica and Times. (Our Headline Fonts are some of the largest available for the Mac!)



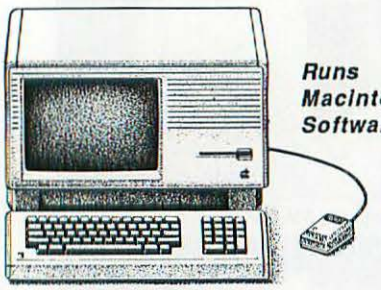
Actual ImageWriter®Output
Text Fonts $49.95,
Headline Fonts $69.95

For a Maccessories dealer near you, for a free 10 page brochure, or to speak to a Kensington sales representative, call toll-free (800) 535-4242. In NY (212) 475-5200.

Trademarks: System Saver, Maccessories/Kensington Microware Ltd. Macintosh, AppleTalk, ImageWriter/Apple Computer Inc.
© 1986 Kensington Microware Ltd.

KENSINGTON™

Point. Click. Save!



Runs Macintosh Software

$799 The Lisa™ Professional

Reconditioned — Warranted

The Lisa Professional. A powerful computer with up to a full Mb of RAM, 40 Mb internal hard disk capacity, 400K internal disk drive, large 12" screen and keyboard complete with numeric keypad. And, powerful as it is, it's easy to run as any Macintosh™ and a whole lot easier to afford!

GREAT APPLE BUYS!

Apple Modem 300	89.00
Apple Modem 1200	195.00
Imagewriter	345.00
Comrex Deluxe Joystick	16.95
BPI Accnt. Modules	189.00
Quark QC 10 HD	795.00
Quark QC 20 HD	895.00
Apple 5Mb Profile	595.00
Apple /// 256K System	599.00
Apple //c Carry Case	19.95
Apple SilenType Printer	19.95
400K Mac Ext. Drives	79.00
Apple DMP Printer	199.00

ORDERLINE -

1-800-821-3221

For a complete lisiting of products CALL FOR OUR LATEST CATALOG

VISA MasterCard

Sun Remarketing

PO Box 4059 Logan, UT 84321

Apple and the Apple logo are registered trademarks of Apple Computer Inc. Macintosh is a trademark of McIntosh Laboratory, Inc.

Circle 618 on reader service card

Features	DiskInfo	Extras	DAFile	DeskZap	MiniDOS	Disk Tools	Utils	Utilities	Developer Tool	File Finder	File Tools	Q&D Filer
Copy				●		●	●	●	●	●	●	●
Delete	●	●	●	●	●	●	●	●	●	●	●	●
Rename	●	●	●	●	●		●	●	●	●	●	●
Free memory information	●	●	●			●				●		●
Disk space			●		●	●		●	●	●	●	●
File-size information	●		●		●	●		●		●	●	●
Launching applications/Set or Quit file		●						●				●
Create new folders				●								
Locate files	●											
File attributes				●				●	●		●	

File-Management Desk Accessories

Desk accessories let you perform Finder-like tasks such as copying, renaming, and deleting files; creating new folders; displaying file information; and launching applications.

ory, create a new folder, set file attributes, and trace the file-folder paths of a particular file. Some desk accessories, like *DeskZap,* even strip and add line feeds and control characters to files (see "Managing Files").

Many F-keys are available from *Quick and Dirty Utilities,* volumes I and II. You can install F-keys with *FKey Installer,* also from Dreams of the Phoenix. The most common way to install desk accessories is to use Apple's Font/DA Mover.

Keep in mind that you can install only 15 desk accessories or 6 F-keys in the System file. The limit is even lower with the HyperDrive and some electronic mail and outline desk accessories, which take up the space of two or three desk accessories. You should also avoid installing too many accessories if you want to conserve disk and memory space. To avoid such space problems, desk accessories like *Other . . . , FKey Runner,* and *Run'r* allow you to use accessories and F-keys that are not installed in the System file; however, you may find problems with certain combinations. For example, *Other . . .* had problems with Microsoft products, and *Run'r* would not work properly with *Waystation.*

Finders to Go

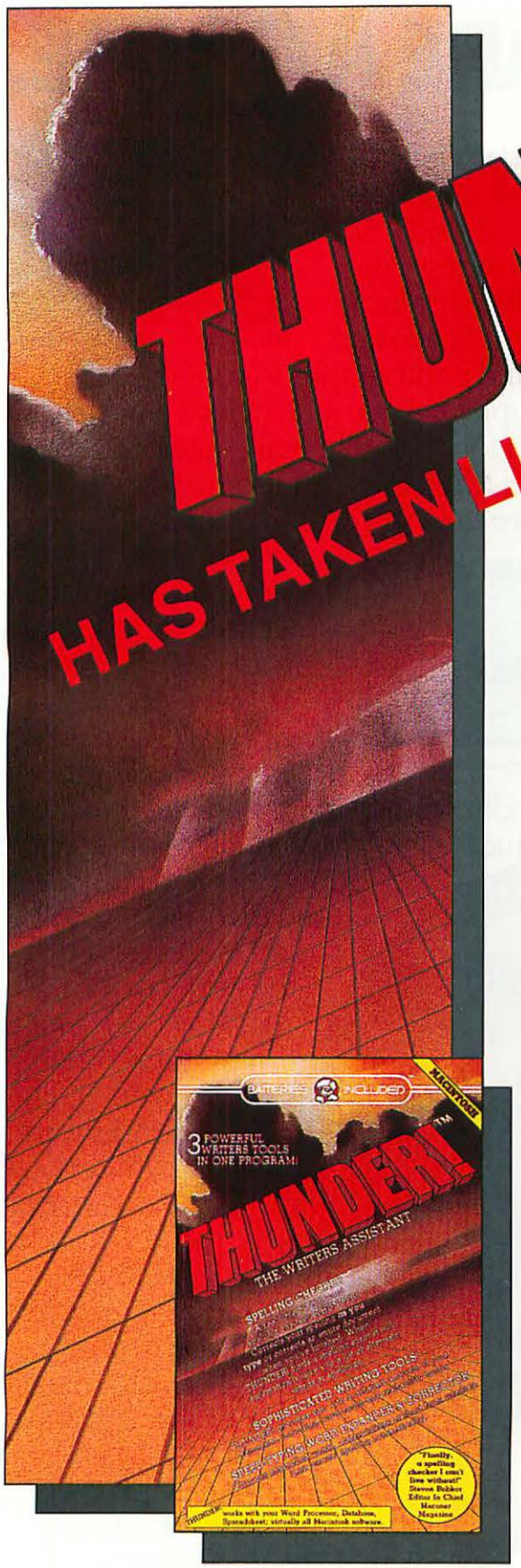
My choice for an alternate Finder is *Waystation,* because of its ease of use and its frequent updates. For file management within applications, I use *DiskInfo* for its Find feature, along with *DeskZap* for copying and manipulating files. Among the commercial desk accessories, *Q&D Filer* is worth having, but it's only available in a package with 15 other utilities. I use *Run'r* to access other F-keys and desk accessories that are not installed in my System file. *FKey Runner* from *Quick and Dirty Utilities* is the commercially available equivalent.

These are just my personal choices, so you may want to explore your local public domain library and software supplier for other alternatives. And once you've tried one, you may not need to go back to the Finder again. □



Managing Files

DeskZap *is a 13K desk accessory that can be used for file management. It can do several Finder tasks within an application.*



THUNDER!™

HAS TAKEN LIGHTNING BY STORM!

WINNER!

MACUSER MAGAZINE
EDITOR'S CHOICE AWARD
BEST DESK ACCESSORY SPELLING CHECKER

Dictionaries	THUNDER! 1.0	vs.	MacLightning™ 2.0
Main			
Words	50,000		80,000
Size (Kbytes)	88K		301K
Add Words	Yes		Yes
Supplementary Dictionaries			
Add/Delete Words	Yes		Not available
Edit with word processor	Yes		Not available
Maintain multiple dictionaries	Yes		Not available
Learned Words (expander)			
Add/Delete Words	Yes		Not available
Edit with word processor	Yes		Not available
Maintain multiple dictionaries	Yes		Not available
Features			
Interactive Spell Checking	Yes		Yes
Typing monitor	Smart		Smart
Check Selection	Yes		Yes
Correct Selection/paste in	Yes		No
Add word with suffixes	Yes		No
Configurable Options	18		None
Word Expander	Yes		No
One-touch correction	Yes		No
Keyboard operation	Complete		Partial
Smart Capitalization	Yes		No
Statistics display including word, sentence, paragraph, syllable count, readability indexes and more	Yes		No
Suggestions for misspellings	look alike/sound alike		place in dictionary/sound alike
Disk Space required	140K		353K
Compatibility			
MacWrite™	Yes		Yes
Microsoft Word™	Yes		Yes
MORE™	Yes		No
Acta™	Yes		No
Microsoft Excel™	Yes		No
PageMaker™	Yes		Yes

ONLY THUNDER! **$49.95** **vs.** MacLightning™ **$99.95**

YOU'VE SEEN THE MacLightning
NOW HEAR OUR THUNDER!

"★★★★★ (A FIVE MOUSE RATING! The highest possible). What makes this spelling checker really stand out is its excellent behavior and performance under all circumstances and its extreme ease of use. *Thunder!* has quickly become the one program I'd least like to be without. If you write, try *Thunder!*"
Steven Bobker, Editor in chief, MacUser magazine.

BATTERIES INCLUDED

BATTERIES INCLUDED, an ITM company, 30 Mural Street, Richmond Hill, Ontario, Canada, L4B 1B5 (416) 881-9941, Customer Information (416) 881-9816

If you can't find this product at your local retailer, you may order it direct from us at the full suggested list price plus $5.00 for postage and handling. For product orders please call 1-800-387-5707 (U.S. only). With all Batteries Included products you can always have the latest version of your program by returning the original disk and $10.00. Write to us for our full color catalog of products for the APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, AND IBM SYSTEMS.

©1986 Batteries Included. APPLE, APPLE MACINTOSH, ATARI, ATARI ST, COMMODORE, COMMODORE AMIGA, AND IBM are registered trademarks respectively of APPLE COMPUTERS INC., ATARI CORPORATION, COMMODORE BUSINESS MACHINES INC., AND INTERNATIONAL BUSINESS MACHINES INC. Some features may vary with computer system used.
*All prices shown in U.S. funds. Retailers may sell for less.

If you can't find this product at your local retailer call our toll-free number to order: *1-800-387-5707*

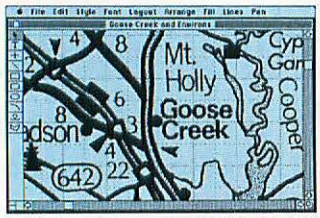
MacLightning is a Copyright • MacLightning™ © Target Software

Circle 380 on reader service card

GIVE YOUR SOFTWARE A GOOSE.

Now that software companies have discovered Mac's graphics interface, their products have become a lot more useful. Because now you can add pictures to your documents. And you know what they say about one picture.

That's where ThunderScan® really becomes valuable. Because ThunderScan can turn most printed images into high-resolution Macintosh graphics. Which means you can insert quality graphics into your files. Making your programs perform like never before.



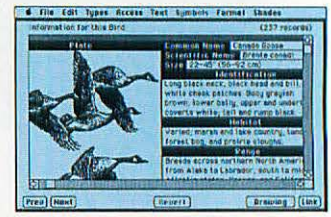
ThunderScan and MacDraw



ThunderScan and PageMaker

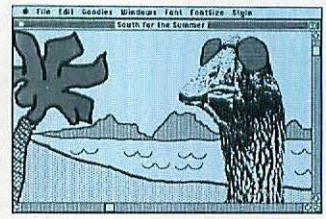


Programs like PageMaker,™ GraphicWorks™ and ReadySetGo™ for desktop publishing. With ThunderScan you don't have to rely on your own artistic abilities or someone else's clip art disk. Instead, you can illustrate your words with just the right graphics (even one-of-a-kind items like your logo or your own portrait). Improving both the professional appearance and readability of your publications.



ThunderScan and Business Filevision

Use ThunderScan with Business Filevision,® dBASE® Mac or Filemaker™ Plus to add pictures and photographs to your data, for more complete, more informative databases. It's perfect for research, real estate portfolios, personnel files — any time you're working with more than words or numbers.



ThunderScan and FullPaint

For those who view Mac as a blank canvas, ThunderScan is an exciting new artistic tool. Not only can you create elegant works of art with ThunderScan's powerful image enhancement software, you can really get wild with SuperPaint and FullPaint.™

And that's just the start. ThunderScan can boost the performance of MacDraw,™ MacDraft,™ MacPaint™ — MacAnything! Plus, Thunderware's new optional $29 connector makes ThunderScan Mac Plus compatible without a wall plug. So if you want to make the best of Mac software even better, take a gander at ThunderScan. At just $229 there's no better way to give your software a goose.

Thunderware,® Inc.
21 Orinda Way
Orinda, CA 94563
(415) 254-6581

ThunderScan

Filevision is a registered trademark of Telos Corporation. GraphicWorks is a trademark of Mindscape, Inc. MacDraft is a trademark of Innovative Data Design, Inc. Filemaker is a trademark of Nashoba Systems, Inc. dBASE is a registered trademark of Ashton-Tate Corporation. FullPaint is a registered trademark of Ann Arbor Softworks. Macintosh is trademark licensed to Apple Computer, Inc. Mac, MacPaint and MacDraw are trademarks of Apple Computer, Inc. ThunderScan, Thunderware and the Thunderware logo are registered trademarks of Thunderware, Inc.

© 1986 Thunderware, Inc.

Mac Finance Tools

The highs and lows of Mac stock-market software

by Charles Seiter and Daniel Ben-Horin



MEL LINDSTROM

The computer's role in this world is to help humans cope with tedious, repetitive tasks. Managing your stock portfolio is a case in point. Two kinds of software currently available for the Macintosh can help you automate your investment chores.

Portfolio managers keep track of profits, losses, dividends, and other bookkeeping and tax-record matters. These programs automatically log on to financial services such as Dow Jones News/Retrieval or CompuServe, download prices for your stocks, and then perform calculations to assess how those stocks are doing.

Market analysis software applies a variety of statistical or other formulas to market and financial data to help you decide which stocks to sell or buy. As you would expect, there is no guarantee of the validity of the forecasts produced by these programs.

Taking Stock

Without a doubt, automatic portfolio updating is the feature that makes portfolio managers worth having. If you follow more than five stocks, you can definitely benefit from the ability to keep your records and profitability figures current with a minimum of effort.

Some representative portfolio programs are *Market Pro* from Pro Plus Software, *Isgur Portfolio System* from Batteries Included, and *The Investor* from P3 (see Figure 1). These programs—as well as the software listed in "Programs for Profit"—have similar features, and each offers price updating as a simple menu choice. In addition, all the programs can handle larger portfolios than you are likely to maintain (several hundred stocks). In the final analysis, these programs are distinguished

(continues)

"Make your Mac a multi-function workstation..."

VersaTerm™

Version 2.30 Price: $ 99.00

- Remote Database Access
- File Transfer
- Mainframe Access
  - Text Terminals
  - Graphics Terminals

Designed for a 128K-512K Mac, Mac Plus or Mac-XL.
Supports the ImageWriter(I/II) and LaserWriter printer.

VersaTerm-PRO™

Version 1.20 Price: $ 295.00

Special upgrade price for registered VersaTerm Owners.

All the features of VersaTerm PLUS...
The most complete and powerful Tektronix 4105 graphics and text emulation available for the Macintosh!!!

Designed for a 512K Mac, Mac Plus or Mac-XL.
Supports the ImageWriter(I/II) and LaserWriter printer.

VersaTerm Product Family Features:

Terminal Emulation:
- **Tektronix 4105 (PRO)**
- DEC VT100
- Tektronix 4014
- Data General D200

File Transfer:
- TEXT
- MacTerminal™ XModem
- Text XModem Protocol
- MacBinary XModem
- Text/Binary Kermit Protocol
- MacBinary Kermit

- ***New! Automatic Macro Definitions***
- Not Copy-Protected.
- Supports DEC VT100 132 column mode.
- Supports all Hard Drives with HFS.
- Supports all Auto-Dial Modems.
- Very High character throughput to 9600 baud.

Special VersaTerm-PRO Features:
- ***New! Cleared Graphic Screens (up to 32) may be instantly viewed from memory.***
- Create TekPrint, MacDraw, MacPaint and MacWrite documents from memory.
- True interactive Zoom and Pan in memory with either the 4105 or 4014 graphics.
- Fully supports all text and graphics features of the Tektronix 4105.
- The 4105 dialog can either be a seperate window or text overlaying the graphics.
- Very high quality, full page graphics may be printed on either the ImageWriter or LaserWriter.
- Color output supported with ImageWriter II.

Published and Distributed by:
PERIPHERALS COMPUTERS & SUPPLIES INC.

Developed by:
Abelbeck Software

PCS Inc.
2457 Perkiomen Avenue
Mt. Penn, PA 19606
(215) 779-0522

See Us at
Macworld Expo Booth #608

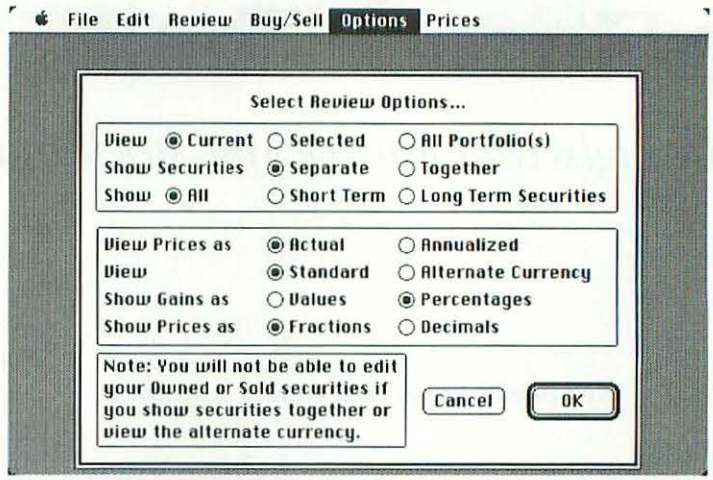


Figure 1
The Options menu from The Investor. *A portfolio manager typically tracks various types of accounts and provides reports that tabulate your results in different investment areas.*

mainly by the convenience of their communications modules. Accordingly, this should be one of your major selection criteria.

If you're a student of the market or want to research a stock without risking anything, one application of automatic quote updating you might consider is *paper trading.* Paper trading simply means that you pick stocks without actually buying them and follow your selections to triumph or disaster. With a portfolio manager, you can avoid the tiresome record-keeping this practice usually entails, and still reap the educational–and ultimately remunerative–benefits. With portfolio managers that also track cash accounts, such as *The Investor,* you can compare your investment results to simple time deposits or T-bills.

Portfolio managers currently include many bookkeeping features that will soon be obsolete. Until 1986, a strong point of this type of software was its ability to track short- and long-term capital gains and losses for tax purposes. But the tax distinctions between different kinds of income have been eliminated by the new tax laws.

Crystal Ball Software

For years investors have used a range of statistical practices to predict market movements and action in individual stocks. In general, these methods fall into two groups.

Fundamental analysis is a technique whereby you look for a company that meets certain financial criteria and then

Programs for Profit

In addition to the software packages discussed in this article, a number of other Mac investment packages deserve to be mentioned.

Among portfolio managers, there are *Stock Portfolio System* and *Market Link* from Smith Micro Software; *Soft Start Personal Finance* from Allegro; *Investment Planning Series* from Apropos Software; *Stock Option Planner* from TaxCalc Software; and *Dow Jones Market Manager Plus* from Dow Jones.

Representatives of the investment analysis category include *Investment IRR Analysis* by Larry Rosen Company; *Commodities Charting* by Hutch Computer Industries; and *Twelve C Financial Desk* from Mark of the Unicorn.

(continues)



FORGET BACKUPS!

With Peak Systems' hard disk and tape drive units, you get automatic, "set it and forget it" backups of all your hard disk data.

Just set the time you want a backup to take place (midnight, for example) and Peak Systems' unique software-controlled tape backup system makes a complete copy of all the files on your hard disk. It's the most painless way ever to make those important backups of your valuable information. You'll have the backups you need without all the hassle of backing up to floppies and without using up boxes of disks.

Peak offers a wide selection of SCSI-based hard disk drives and tape backup systems. If you like, you can start with an inexpensive hard disk now and add the tape drive later. (We've even got an add-on SCSI port that lets you use Peak drives and tape units with your 512K Enhanced Macintosh™.)

Peak's PLUS™ Drives are single hard disk drives in 20, 30, 45 and 65 megabyte capacities. Our PLUS-20T tape drive backs up any hard disk drive you use with your Macintosh. And if you want both a hard disk and tape now, consider the SIERRA™—our newest addition that offers a hard disk and a tape system in one compact cabinet.

All Peak Systems hard disk drives come complete with utility software to perform data backup and system diagnostics. Our products are 100% Macintosh-compatible (including AppleTalk™ applications such as MacServe™), have FCC approval and are covered by a one year warranty.

For the dealer nearest you, call Peak Systems at **800-225-7509**. In Texas call **512-329-1020**

Requirements: Macintosh Plus or Macintosh 512K E with SCSI port.

Apple is a trademark and Macintosh is a trademark licensed to Apple Computer, Inc. PLUS and SIERRA are trademarks of Peak Systems, Inc. MacServe is a trademark of Infosphere, Inc.



PEAK SYSTEMS

Call 800-225-7509
in Texas (512) 329-1020
P.O. Box 161404 Austin, Texas 78716-1404

See Us in Booth 505
at the San Francisco
Macworld Expo Jan. 8th–10th

decide whether its stock is over- or undervalued. In *technical analysis,* by contrast, you examine a company's stock price over time as simply a series of numbers (a time series). The premise of technical analysis is that statistical examination of price information alone can pick out reliable trends. Both methods have their enthusiastic proponents, and both have produced alluring successes as well as disheartening failures.

Market Pro is the only Mac program that performs fundamental analysis. *Market Pro* automatically logs on to financial services and downloads standard parameters of financial health for a specified company (such as debt-to-equity ratio and long-term debt). The program then makes calculations and presents an opinion of the company's prospects based on established formulas.

For good measure, *Market Pro* combines a state-of-the-art technical-analysis package with the portfolio manager already mentioned (see Figure 2). This integrated approach is efficient and cost-effective, since *Market Pro* costs less than a set of individual programs that perform the same functions. *Market Pro* also has the advantage of allowing comparison of results between the two predictive techniques.

For "technicians," *Profit Stalker II* from Button.down Software offers somewhat more advanced technical-analysis capabilities than *Market Pro* (see Figure 3). It also provides automatic downloading of stock data from on-line services, as well as extended plotting and data-treatment facilities. *Profit Stalker II* generates all the forecasting charts associated with stock-tip newsletters, and its helpful manual makes it a friendly introduction to this mysterious pastime.

Hard-core technical analysts may be satisfied with nothing less than the statistical time-series analysis package *Forecasting and Time-Series* from Lionheart. (*Sales and Market Forecasting,* also from Lionheart, provides a similar repertoire of techniques.) *Forecasting and Time-Series* is a professional system for analysis of time-series data and comes with a good selection of sample data, including some stock market examples. The program doesn't capture on-line stock data directly; you have to capture data to a spreadsheet and

(continues)

CompuCover®



COVER YOUR INVESTMENT

DUST COVERS

MacIntosh CRT & Keyboard	12.95
MacIntosh CRT & Keyboard & Mouse	13.95
MacIntosh Disk Drive or Floppy Drive	5.95
MacIntosh Plus Keyboard	8.95
MacIntosh CRT & MAC Bottom Disk	15.95
MacIntosh Laser Jet Printer	10.95

DISK WALLETS

3½'' Disk for 20 Disks	16.95
3½'' Disk for 10 Disks	14.95
3½'' Disk for 6 Disks	9.95

Anti-Static-different colors

ORDER LINE
1-800-874-6391
FLORIDA ORDER LINE
1-800-342-9008
Dealer Inquiries Invited

CompuCover
P.O. Box 310 Dept. M
Mary Esther, FL 32569

Customer Service
(904) 243-5793
Telex 469783

Circle 496 on reader service card

MDC II T.M.
MAC DISK CATALOG II



MDC II for the 512K Mac, Plus and XL. HFS Compatible: • Catalog diskettes and hard disks • Fully indexed database • Find and Select files and volumes • 4M to 6M entries (512K) • Volume IDs • 32 Standard/User Categories • Category Learn Mode • Full Editing • Reports, Diskette Labels, 3X5 Cards and Text File output. **MDC II**–$49.95

NEW... MDCFinder™

Our new **MDCFinder™** desk accessory lets you search your MDC II Catalog anytime, from anywhere. **MDCFinder** – $29.95.

Mac Disk Catalog™ (128K)–$39.95

Pinfeed **MDCLabels™** – Choose from six colors or order the Rainbow Pack:
150/$11.95 • 250/$19.95 • 500/$39.95

SPECIAL

Order **MDC II** and **MDCFinder** together for just $74.95.

Shipping & Handling $3.00 ($5.00 Foreign) per order. Visa/Mastercard Accepted.

new canaan MicroCode
136 Beech Rd. New Canaan, CT 06840 (203) 966-6969

Circle 284 on reader service card

LIONHEART

BUSINESS & STATISTICAL SOFTWARE

PC/MS-DOS (5¼ & 3½), MACINTOSH, AMIGA ATARI ST, C64/128, CP/M, APPLE DOS 3.3

Explanatory books with professional compiled software; the new standard for statistical use. The influential Seybold Report on Professional Computing has this to say about Lionheart "... our sentimental favorite because of its pragmatic approach to the basic statistical concepts... The thinking is that the computer merely facilitates the calculations; the important thing is to be able to formulate a problem correctly and to determine what type of analysis will be most valuable." Let Lionheart help you get ahead of the competition! Spreadsheet compatible.

• BUSINESS STATISTICS	$145
• EXPERIMENTAL STATISTICS	145
• MULTIVARIATE ANALYSIS	150
• EXPLORATORY DATA ANALYSIS	75
• STATISTICS FOR MARKETING	150
• QUALITY CONTROL & INDUSTRIAL EXPERIMENTS	145
• FORECASTING AND TIME-SERIES	145
• SALES AND MARKET FORECASTING	145
• DECISION ANALYSIS TECHNIQUES	110
• LINEAR & NON-LINEAR PROGRAMMING	95
• PERT & CRITICAL PATH TECHNIQUES	95
• OPTIMIZATION	110

VISA, MasterCard, AMEX, Check

P.O. Box 379, ALBURG, VT 05440

(514) 933-4918

Circle 238 on reader service card

NOW AVAILABLE...

Rolls of Blank **MAC LABELS** 2-3/4" X 2-3/4"



- Wrap Around
- Non Smear
- Pin-Feed
- Removable Adhesive
- Six Colors: White, Yellow, Pink, Lt Blue, Lt Green, & Grey

500 for Only **$16.95**
1000 for Only **$29.95**

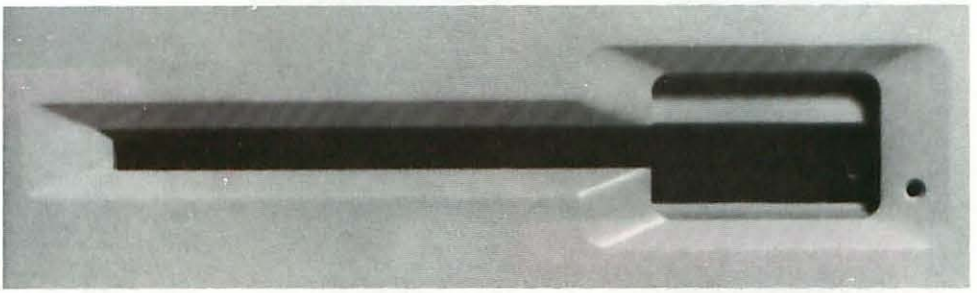
HOW TO ORDER!

Total cost of rolls ordered. Add shipping charge ($2.50 for the first roll and 50¢ for each additional roll). California residents add 6.5% sales tax. COD orders add $2.00. VISA/MASTER CARD accepted, include card no. & expiration date. Send check or money order for GRAND TOTAL to

DATA WIZ
21115 Devonshire Blvd. Suite 465-B
Chatsworth, CA 91311

Circle 612 on reader service card

This is the only place you can find



Software That Fits™!

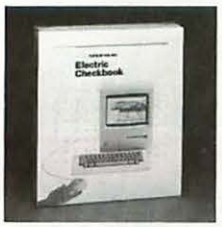
Try That Program First!

No matter how many reviews you read, no matter how many experts you consult, there's only one way to know whether a program will do what you want it to . . . run it on your machine, with your data.

Not just an hour or so in a store, and not with a "demo" disk. We're talking full-bore, flat-out, pedal-to-the-metal test drive.

FREE For Three!

Through January 31st, 1987, you can try any three of the programs we offer, and we'll send along a copy of Electric Checkbook, free for you to evaluate.



Think of all the competing programs you've been wanting to try . . . Superpaint/Fullpaint, Macdraft/Macdraw, Ragtime/ReadySetGo, Double Helix/Omnis 3. Pick any three for evaluation, and we'll send along Electric Checkbook for you to try at no extra charge.

What are you waiting for? Pick your programs from any that we offer, and call us for prices. Trial prices apply towards purchase, if you decide to keep a program.

Select From More Than 500 Titles!

We offer the most popular Mac software, under a trial use plan. We even include manuals. *You* pick the program. *You* decide whether it's worth buying. If it fits, keep it, and pay the difference. If it doesn't, send it back.

Either way, you'll know for sure!

Call For Our Winter Catalogue!

Remember, we have more than 500 software titles in stock, so call and order the ones you've been thinking about. Get a hands-on tryout for a fraction of the purchase price... whichever ones you decide to keep, all you pay is the difference.

And remember our Free-For-Three offer when you order.

Software That Fits™

1-800-972-3018

(713) 540-2300



Save on Sony Disks!

(SS) boxed **$1.20** bulk **$1.08**

(DS) boxed **$1.70** bulk **$1.38**

Why Pay More?

Save on disk drives and ribbons, too! Call us.

MacRENTALS™ P.O. Box 4028 • Humble, TX 77347

Circle 368 on reader service card

PROGRAMS PLUS ▷ 1-800-832-3201

Backup & Utility Software

Apple Computer Switcher Construction Set	14.00
Central Point Software Copy II Mac *(Includes MacTools)*	20.00
Dreams Of The Phoenix Quick & Dirty Utilities Vol. 1 or 2	27.00
FWB Software Hard Disk Util	57.00
Hard Disk Backup	39.00
Hard Disk Partition	39.00
Hayden MUD *(MacroMind Utility Disk)*	29.00
Ideaform Mac Labeler *(Version 2.2)*	29.00
Infosphere MacServe	249.00
LaserServe	125.00
Kent Marsh Ltd. MacSafe	49.00
MacMaster Systems Fedit Plus V1.0	32.00
MacMemory, Inc. MaxRam & MaxPrint	39.00
Mainstay MacBooster, Disk Ranger, or MacSpool	32.00
N'Cryptor or PacPaint	26.00
Flashback *(Hard Disk Backup Utility)*	36.00
Meacom Mac +][*(Version 3.0)*	105.00
MicroAnalyst MacZap *(Version 4.1)*	38.00
Nevins Microsystems TurboCharger *(Version 2.0)*	39.00
New Canaan MicroCode Mac Disk Catalog II *(512K)*	32.00
MDCFinder	20.00
PBI Software HD Back-Up	29.00
HFS Locator Plus	27.00
Personal Computer Peripherals Corp. HFS Backup	35.00
Softstyle Printworks	49.00
Epstart V2.0, Jetstart, or Toshstart	27.00
Laserstart	59.00
TI Start or ColorMate V2.1	49.00
ColorMate Art	25.00
PlotStart w/Cable	69.00
Williams & Macias myDiskLabeler V2.11	27.00
myDiskLabeler w/Color	34.00
myDiskLabeler for LaserWriter	35.00

Desk Accessory Programs

Affinity Microsystems Tempo *(Version 1.1)*	59.00
Batteries Included Battery Pak *(Version 1.1)*	29.00
Borland SideKick with PhoneLink *(Version 1.1)*	59.00
Cortland Top Desk *(Version 1.4)*	35.00
Dreams Of The Phoenix Twelve-C	27.00
Imagine Software Smart Alarms	39.00
Silicon Beach Software Accessory Pak #1	21.00

Languages

Advanced A.I. Systems A.I. Prolog	109.00
Apple Computer MacPascal	99.00
Macintosh 68000 Development System	159.00
Borland Turbo Pascal	65.00
Consulair Mac C/Mac C Toolkit *(Version 4.5)*	259.00
Megamax, Inc. Megamax C Compiler	175.00
Microsoft Microsoft Basic *(Version 2.1)*	89.00
Microsoft Logo *(Version 1.0)*	75.00
Microsoft Fortran Compiler *(Version 2.1)*	169.00
Think Technologies Lightspeed C	129.00
Lightspeed Pascal	95.00
TML Systems TML Pascal V2.0	69.00
TML Source Code Library	59.00
DataBase Toolkit	65.00
True Basic, Inc. True Basic	89.00
True Basic Runtime	95.00
Algebra, Pre-Calculus, Calculus, Statistics, Trigonometry, 3D Graphics, Discrete Math, Probability, & Chippendale utilities *(each)*	36.00
Zedcor, Inc. ZBasic	65.00

Communications Software

Apple Computer MacTerminal	99.00
Compuserve Compuserve Starter Kit	27.00
DataViz MacLink with Cable *(Transfer Mac/IBM Files)*	105.00
Dilithium Press PC to Mac and Back with Cables	105.00
Dreams Of The Phoenix Mouse Exchange Terminal	27.00
Hayes Microcomputer Smartcom II	89.00
Mainstay Telescape Pro *(VT100 Emulator)*	79.00
Turbo Download	25.00
Palantir inTalk *(TTY, VT-100, ADDS, IBM 3101, Vidtex)*	79.00
Software Ventures Microphone	59.00
Think Technologies, Inc. InBox-Starter Kit *(3 Personal Connections)*	215.00
InBox-Additional Personal Connections	59.00

DataBase Management

Ashton-Tate dBase Mac	309.00
Blythe Software Omnis 3 Plus	279.00
Minis 3 Multiuser *(2-5 Users, Specify MacServe or Corvus)*	569.00
Borland Reflex	59.00
Forethought FileMaker Plus	159.00
Microsoft Microsoft File 1.02	110.00
Odesta Helix *(Version 2.0)*	105.00
Double Helix	275.00
ProVUE Development OverVUE 2.0d	149.00
Software Discoveries, Inc. Record Holder	42.00
Telos Software Business FileVision	199.00

Business Software

Apple Computer MacProject	159.00
Assimilation Process Business Essentials	49.00
Cricket Software Cricket Graph	129.00
Dreams Of The Phoenix Day Keeper Calendar	27.00
Execucom Mindsight	179.00
Human Edge Software The Communications Edge	57.00
The Management Edge or The Sales Edge	57.00
Negotiation Edge	57.00
The Mind Prober	28.00
Lotus Jazz *(Version 1.A)*	259.00
Mainstay MacFlow *(Flowchart Design & Documentation)*	85.00
Micro Planning Software Micro Planner Plus	299.00
Microsoft Microsoft Works	189.00
Microsoft Multiplan 1.1	105.00
Microsoft Chart 1.0	72.00
Microsoft Excel 1.0	225.00
Legisoft/Nolo Press WillWriter V2.0 *(Includes Testimonial Trust)*	32.00
Pro Plus Software Market Pro	259.00
Satori Software Bulk Mailer	79.00
Softechnics/Batteries Included Time Link *(Time Management System)*	32.00

Word/Idea Processors

Living Videotext More *(Third Generation Idea Processing)*	159.00
Think Tank 512	99.00
Mainstay Think Now	36.00
Microsoft Microsoft Word 1.05	111.00
OWL International Guide *Hypertext for the Macintosh*	95.00
Symmetry Acta *(Outline Word Processor in DA Format)*	39.00
Target Software Voila! *(Full Featured Desk Accessory Outliner)*	53.00
T/Maker Company WriteNow	105.00

Spelling Checkers

A.L.P. Systems MacProof V2.0 *(Spelling, Style, & Grammar Checker)*	129.00
Assimilation Process The Right Word	49.00
Batteries Included Thunder! *(Interactive Spelling Checker)*	26.00
Creighton Development MacSpell+	55.00
EnterSet, Inc MacGas *(with Glossary & Thesaurus)*	55.00
Hayden Software Hayden: Speller	26.00
Greene, Johnson Inc. Spellswell	45.00
Mainstay SpellNow	36.00
Target Software MacLightning 2.0 w/Webster Dictionary	53.00
Additional Thesaurus Library	28.00
Medical Dictionary or Legal Dictionary	53.00

Desktop Publishing

Boston Software Publishers The MacPublisher II	139.00
Mac-Hy-Phen	69.00
MacIndexer	62.00
Manhattan Graphics Ready, Set, Go! *(Version 3.0)*	179.00
ReadySetGo! Desk Design	37.00
Orange Micro, Inc. Ragtime *(Integrated Page Processing)*	239.00
Solutions, Inc. Glue *(Transfer Graphics Conveniently and "Print to Disk" Facility)*	42.00

Overlays For Multiplan & Excel™

Apropos Financial Planning or Investment Planning	45.00
RealData, Inc. *Overlays For Multiplan, Jazz & Excel™*	
Tax Shelter Syndication Analysis	169.00
On Schedule	119.00
Real Estate Investment Analysis V5.0	125.00
Financial Analysis	62.00
Commercial/Industrial Applications	62.00
Residential Real Estate	62.00
Overlays For Microsoft Excel™	
Property Management Level 1	149.00
Mortgage Qualifier	119.00
Listing Prospect Data Management	119.00

Accounting Packages

BPI BPI Entry Series-General Accounting	225.00
Chang Labs Rags to Riches GL, AR, or AP	99.00
Rags to Riches Three Pack-GL/AR/AP	249.00
Inventory Control	229.00
Professional Billing	229.00
Professional Three Pack-GL/Pro Billing/Payables	349.00
Continental/Arrays The Home Accountant	52.00
Digital, Etc. *Turbo* Maccountant	269.00
Maccountant V2.0	99.00
Monogram Dollars & $ense	81.00
Business Sense GL/AR/AP	349.00
Open Systems Open For Business II	499.00
Palantir GL, AR, or Inventory Control	59.00
Peachtree General Ledger or Accounts Receivable	89.00
Accounts Payable	89.00
Sierra On-Line MacOneWrite GL or AR	39.00
MacOneWrite Cash Disbursements	39.00
MacOneWrite Three Pack *(GL/AR/CD)*	59.00

Statistics Packages

BrainPower StatView 512 Plus	179.00
Cricket Software Statworks	79.00
Northwest Analytical NWA StatPak	229.00
NWA Quality Analyst	299.00
StatSoft StatFast-2	75.00
Statware, Inc. Stat80 *(Standard)*	179.00
Stat80 *(Professional)*	279.00
Systat Systat *(Version 3.0)*	459.00

Graphics Software

Altsys Corp. Fontastic	25.00
Ann Arbor Softworks Full Paint *(Un-Protected, includes ColorPrint)*	59.00
Brainpower Graphadex *(Graphics Indexing Program)*	69.00
Broderbund Print Shop	49.00
Toy Shop	41.00
Casady Company Fluent Fonts *(Two-Disk Set)*	29.00
Fluent Laser Fonts *Choice of: Bodoni, SanSerif, Ritz & Right Bank, Monterey, Caligraphy & Regency, or Prelude*	49.00
Desktop Graphics DrawArt	29.00
Dubl-Click Software World Class Fonts Volume I *(3 Disk Set)*	29.00
World Class Fonts Volume II *(3 Disk Set)*	29.00
EDO Communications LaserWorks *(Version 1.2)*	239.00
Hayden VideoWorks	59.00
DaVinci: Building Blocks	52.00
DaVinci: Commercial Interiors	119.00
Innovative Data Design Paste-Ease *(Volumes I & II)*	36.00
I/O Designs ColorPrint Software Only	25.00
ColorPrint Starter Kit-3	39.00
MicroSpot MacPalette	52.00
Miles Computing Mac The Knife Volume III	27.00
Mindscape ComicWorks	49.00
GraphicWorks	49.00
Silicon Beach Software SuperPaint	56.00
Silicon Press	42.00
Springboard Art A La Mac Vol. 1-People & Places	23.00
Art A La Mac Vol. 2-Variety Pack	23.00
Symmetry PictureBase	45.00
T/Maker Click Art Letters or Personal Graphics	29.00
Click Art Publications or Effects	29.00
Click Art Letters II or Click Art Holidays	29.00
Click Art Business Image	29.00

CAD Products

Apple Computer MacDraw	159.00
BrainPower DesignScope	129.00
Challenger Software Mac 3D *(Version 2.0)*	Call
Cricket Software Cricket Draw	179.00
Dreams Of The Phoenix Phoenix 3D Level One	27.00
Enabling Technologies Easy 3D	89.00
Innovative Data Design MacDraft *(Version 1.2)*	189.00
MicroSpot MacPlot	119.00
MacPlot Professional	224.00
Vamp, Inc. McCad *PCB*	299.00
McCad *Schematics*	399.00

Educational/Creative Software

Addison Wesley Puppy Love	26.00
Broderbund Sensei Geometry	62.00
Davidson & Associates Speed Reader II	37.00
Math Blaster or Word Attack!	27.00
Electronic Arts Pinball Construction Set	27.00
Deluxe Music Construction Set V2.0	64.00
First Byte Kid Talk or Speller Bee	42.00
Math Talk	42.00
First Shapes	32.00
Great Wave Software ConcertWare Plus	39.00
Concertware MIDI	99.00
KidsTime	29.00
Hayden MusicWorks	32.00
Score Improvement System for the SAT	59.00
Score Improvement-Achievement Tests	59.00
Kette Group Studio Session	69.00
Micro: Maps MacAtlas Volume 1 or 2	49.00
Microsoft Hands On Excel	32.00
Learning Multiplan & Chart	39.00
Mindscape Perfect Score SAT	47.00
The Lucher Profile	26.00
Dick Francis' High Stakes	26.00
Queue Intellectual Software Not Like The Others	36.00
How Many? or Early Reader	25.00
What Comes Next?	35.00
Reading & Thinking I or II	39.00
Vocabulary Adventure I or II	44.00
Spanish Grammar I, II, or III	25.00
World Geography Adventure I or II	44.00
U.S. Geography Adventure	44.00
How A Bill Becomes A Law	44.00
American History Adventure	44.00
Starting A New Business	44.00
Analogies I or II	49.00
College Aptitude Reading Exercises	49.00
Rubicon Publishing Dinner at Eight	35.00
Silver Palate Collection	29.00
Dinner at Eight-Silver Palate Bundle	59.00
Simon & Schuster Typing Tutor III	35.00
Paper Airplane Construction Set	24.00
Software Concepts Concepts Computerized Atlas	45.00
Spinnaker Typing Made Easy	32.00
Springboard Early Games for Young Children	29.00
Easy as ABC	29.00

Game Software

Accolade Hard Ball	25.00
Activision Borrowed Time or Hacker	27.00
Hacker II: The Doomsday Papers	32.00
Mindshadow or Shanghai	27.00
Championship Star League Baseball	22.00
Alter Ego *(Male or Female Version)*	36.00
Tass Times In Tonetown	29.00
Broderbund Ancient Art of War	27.00
Bullseye Software Fokker TriPlane Flight Simulator	35.00
Ferrari Grand Prix	35.00
Electronic Arts Autoduel	34.00
ChessMaster 2000	31.00
Patton vs Rommel or One-On-One	27.00
SkyFox, Archon, or Scrabble	27.00
EPYX Winter Games or Rogue	24.00
Temple of Apshai Trilogy	24.00
Hayden Software Sargon III	29.00
Infinity Software, LTD Grand Slam Tennis	29.00
Infocom A Mind Forever Voyaging	26.00
Cutthroats, Enchantor, or Ballyhoo	23.00
Deadline or Starcross	29.00
Hitchhiker's Guide or Zork I	23.00
Infidel, Zork II, Zork III or Moon Mist	26.00
Planetfall, Seastalker or Trinity	23.00
Sorceror, Suspect, or Leather Goddesses of Phobos	26.00
Suspended or Spellbreaker	29.00
Wishbringer or Witness	23.00
Invisiclues-Hint Booklets (ea.)	6.00
MacroMind Maze Wars+	32.00
Microsoft Flight Simulator *(Version 1.0)*	32.00
Mindscape Balance of Power	30.00
Crossword Magic	30.00
Deja Vu: A Nightmare Comes True	33.00
Indiana Jones: Revenge of the Ancients	25.00
James Bond 007: A View To Kill	24.00
James Bond 007: Goldfinger	24.00
King Of Chicago	32.00
Racter or The Halley Project	27.00
Rambo: First Blood Part II	24.00
Stephen King's: The Mist	24.00
The Uninvited	30.00
Omnitrend Software Omnitrend's Universe II	39.00
Origin Systems Exodus: Ultima III	38.00
PBI Software Strategic Conquest II *(Multi-Player War Game)*	39.00
Polarware Pensate, Transylvania, or Sword of Kadash	15.00
Xyphus, Coveted Mirror, Crimson Crown, or Oo-Topos	15.00
Practical Computer Applications MacGolf *(Version 2.0)*	36.00
Psion Psion Chess *(3D & Multi-Lingual)*	31.00
Q Ware, Inc. OrbQuest	35.00
Silicon Beach Software Enchanted Scepters	21.00
Dark Castle	28.00
World Builder	45.00
Simon & Schuster Star Trek *(The Kobayashi Adventure)*	24.00
Sir-Tech Mac Wizardry	36.00
Spectrum Holobyte GATO	26.00
Orbiter	27.00
Sublogic JET *(Simulates Land Based F-16 & Carrier Based F-18)*	35.00
Videx MacGammon & Cribbage	28.00
MacVegas	34.00

Disk Drives/Hard Disks/ Upgrades

AST Research AST-2000 *20 MB External Hard Disk with 20-MB Cartridge-Tape Backup for the Macintosh Plus.*	1995.00
AST-4000 *74 MB External Hard Disk with 60-MB Cartridge-Tape Backup for the Macintosh Plus.*	4735.00

In Connecticut Call 378-3662 or 378-8293

Dove Computer Corporation
MacSnap +2
(MacPlus to 2MB Upgrade) 369.00
MacSnap Model 524
(512K to 1MB Upgrade) 249.00
MacSnap Model 548
(512K to 2MB Upgrade) 499.00
Ehman Engineering
All Ehman Drives come with a 12-Month Warranty
800K Disk Drive *(Totally Silent)* 219.00
20HD *(20MB SCSI Hard Drive for MacPlus)* Call
Iomega
Single Cartridge Drives
Bernoulli Box 10MB for MacPlus 1209.00
Bernoulli Box 20MB for MacPlus 1619.00
Dual Cartridge Drives
Bernoulli Box 2-10MB for MacPlus SCSI 1819.00
Bernoulli Box 2-20MB for MacPlus SCSI 2359.00
10MB Cartridges *(3 Pack)* 159.00
20MB Cartridges *(3 Pack)* 209.00
Head Cleaning Kit 69.00
LoDOWN
Hard Disks & Tape Backups for the MacPlus
LoDown 20/20 Combo *(20 MB Hard Disk w/20MB Tape)* 1439.00
LoDown-T20 *(20 Megabyte Tape Drive)* 789.00
LoDown-20 *(20 Megabyte Hard Disk)* 889.00
MacMemory, Inc.
The MaxPlus *(2MB Upgrade w/MaxRam/Max Print/MaxChill)* 399.00
The MaxPlus Enhanced *(2.5MB w/MaxRam/Max Print/MaxChill)* 559.00
MaxSave *(Internal Recoverable Ram Disk For the MacPlus)* 99.00
MDIdeas, Inc.
HD-20 *(20MB Hard Disk For MacPlus)* 899.00
HD-30 *(30MB Hard Disk For MacPlus)* 1299.00
TDBK-20+ *(22MB Cartridge Tape Backup)* 879.00
Mirror Technologies
Magnum 800K External Drive 229.00
MagNet 20 *(Internal 20MB Hard Drive w/MacServe)* 1095.00
MagNet 20X *(External 20MB Hard Drive w/Cable)* 939.00
MagNet 30X *(External 30MB Hard Drive w/Cable)* 995.00
MagNet 30X *(External 30MB w/MacServe & Cable)* 1095.00
MagNet 40/40 *(40MB w/40MB Tape, MacServe Included)* 2495.00
Magnum Tape 20 *(20MB Tape Backup)* 949.00
FastPort *("SCSI" Port for your Mac 512K)* 139.00
Peachtree Technology S20+ *(20MB for MacPlus SCSI w/Cable)* 699.00
Peak Systems
Plus-20 *(20MB SCSI Drive)* 759.00
Plus-30 *(30MB SCSI Drive)* 1019.00
Plus-20T *(20MB Tape Backup)* 669.00
Sierra *(20MB Drive with 40MB Tape)* 1819.00
Sierra XL *(30MB Drive with 40MB Tape)* 1959.00
Peripheral Land
PL 20-21MB Formatted for MacPlus 789.00
PL 30-32MB Formatted for MacPlus 949.00
MacFast 20-21MB w/Tape Controller for Mac 512K or MacPlus 949.00
MacFast 30-32MB w/Tape Controller for Mac 512K or MacPlus 1229.00
MacBack 20-27MB Tape Backup 799.00
MacPort Plus Host Adaptor-SCSI Interface for Mac 512K 159.00
Personal Computer Peripherals
MacBottom HD-21 *(20MB Hard Disk for MacPlus SCSI)* 869.00
PKI McD 800K External Drive 189.00
ProAPP *World's Fastest High-Capacity MacPlus SCSI Hard Disk System:*
ProAPP 40S Hard Disk System *(Sub-30msec. Voice Coil Technology)* Call
ProAPP 20MB Hard Disk System *(Mac 128K,512K,MacPlus SCSI)* Call
Relax Technology
Hard 20 Plus *(MacPlus 20MB SCSI)* 729.00
Mac Mate 20 *(MacPlus 20MB SCSI)* 699.00
Univation
MacSlimLine Hard Drives with Crash Protection
1-10MB Removable Hard Disk 1719.00
-10MB Removable Hard Disk 2739.00
30MB Fixed Hard Drive Only 1489.00
40MB Fixed Hard Drive Only 2119.00
20MB Fixed with 10MB Removable or 40MB Tape Backup 2349.00
30MB Fixed with 10MB Removable or 40MB Tape Backup 2589.00
40MB Fixed with 10MB Removable or 40MB Tape Backup 3129.00
Western Automation Labs
Dasch External RAMdisk *(2048KB)* 399.00

Modems

Anchor Automation
Signalman Express 1200 Baud 235.00
Signalman Lightning 2400 Baud 355.00
Hayes Microcomputing Interbridge 549.00
Smartmodem 1200 379.00
Smartmodem 1200 Mac w/Smartcom II & Cable 429.00
Smartmodem 2400 579.00
Transet 1000-128K 269.00
Transet 1000-512K 359.00
Transet 1000 Mac Accessory Kit 31.00
Prentice
Popcom X-100 Modem w/Straightalk 259.00
Prometheus
Promodem 1200M w/ProCom-M 299.00
U.S. Robotics Password 1200 199.00
Courier 2400 389.00

Printers

Brother
M-1109AP *ImageWriter Compatible* 269.00
HR-20 *(20cps)* Daisywheel/Serial 349.00
HR-25 *(23cps)* Daisywheel/Serial 519.00
HR-35 *(35cps)* Daisywheel/Serial 729.00
Juki
6100 *(18cps)* Daisywheel Serial 399.00
6200 *(30cps)* Daisywheel Serial 579.00
6300 *(40cps)* Daisywheel Serial 689.00
Okidata ML-192 Apple Mac/Lisa 389.00
ML-193 Apple Mac/Lisa 559.00
Toshiba
P-321 24 Pin *(216cps)* Par./Ser. 10" 499.00
P-341 24 Pin *(216cps)* Par./Ser. 10" 739.00
P-351 24 Pin *(288cps)* Par./Ser. 15" 1079.00

Blank Media

Single Sided 3½" Diskettes
BASF 3½" SS/DD Disks *(box of 5)* 10.00
Bulk *(Sony)* 3½" SS/DD Disks *(10)* 15.00
Sony 3½" SS/DD Disks *(box of 10)* 16.00
Centech 3½" SS/DD Color Disks *(box of 10)* 18.00
Fuji 3½" SS/DD Disks *(box of 10)* 16.00
Maxell 3½" SS/DD Disks *(box of 10)* 16.00
Verbatim 3½" SS/DD Disks *(box of 10)* 17.00
3M 3½" SS/DD Disks *(box of 10)* 19.00
C.Itoh Color Disks SS/DD *(box of 10)* 21.00
Double Sided 3½" Diskettes
BASF 3½" DS/DD Disks *(box of 5)* 14.00
Bulk *(Sony)* 3½" DS/DD *(10)* 21.00
Centech 3½" DS/DD Color Disks *(box of 10)* 24.00
Sony 3½" DS/DD Disks *(box of 10)* 24.00
Fuji 3½" DS/DD Disks *(box of 10)* 24.00
Maxell 3½" DS/DD Disks *(box of 10)* 24.00
Verbatim 3½" DS/DD Disks *(box of 10)* 25.00
3M 3½" DS/DD Disks *(box of 10)* 27.00
C.Itoh Color Disks DS/DD *(box of 10)* 29.00

Digitizers

Kette Group
Capture any sound from the real world!
MacNifty Audio Digitizer w/SoundCap 99.00
Koala Technologies Corp.
KAT Graphics Tablet 135.00
MacVision 169.00
Magnum Natural Sound Cable & Editor 89.00
Sound Effects 26.00
New Image Technology Magic Digitizer 249.00
Summagraphics MacTablet 6x9 size 259.00
MacTablet 12x12 size 359.00
ThunderWare
Thunderscan V3.2 *(Mac 128 & 512K)* 175.00
MacPlus Power Accessory 29.00
MacPlus Adapter Cable Kit: *(Thunderscan to MacPlus & to ImageWriter II Cables)* 39.00

Accessories

A.M. Products
3½" Head & Computer Cleaning Kit 18.00
Assimilation Process Numeric Turbo 109.00
Mac Turbo Touch 89.00
Bech-Tech Fanny Mac 79.00
Curtis Manufacturing
Diamond-Surge Suppressor-SP1 29.00
Emerald-Surge Suppressor-SP2 36.00
Ruby-Surge Suppressor-SPF-2 55.00
Sapphire-Surge Suppressor-SPF-1 47.00
Diversions, Inc.
Underware Color Pens-Small 10.00
Underware Color Pens-Large 13.00
Environmental Software Company
MacAttire: Available in Navy-Blue, Burgundy, or Silver-Gray.
External Drive or Keypad Cover 7.00
ImageWriter II Cover 11.00
Wide ImageWriter Cover 13.00
Mac & KeyBoard Cover 15.00
MacPlus & Keyboard Cover 15.00
MacPlus, HD-20, & Keyboard Cover 18.00
LaserWriter Cover 17.00
Ergotron MacTilt *(Mac 128/512K or MacPlus Version)* 75.00
MacBuffer 256K 249.00
MacBuffer 512K 369.00
MacBuffer 1024K 569.00
Hayes CH Mach IV Joystick 59.00
Innovative Concepts Flip 'n' File/Micro 9.00
Flip 'n' File II/Micro 18.00
Innovative Technology
The Pocket Pack *(holds 6 disks)* 10.00
The Disk Directory *(holds 32 disks)* 18.00
The Easel *(holds 20 disks)* 14.00
The Pyramid 14.00
The Library 29.00
I/O Design MacPlus Carrying Case 69.00
ImageWriter Carrying Case 39.00
ImageWriter II Carrying Case 49.00
ImageWriter Wide Carrying Case 49.00
Kalmar Designs
Teakwood Roll-Top Disk Cases:
Micro Cabinet *(holds 45 3½" disks)* 14.00
Double Micro Cabinet *(holds 60 3½" disks)* 21.00
Teakwood Printer Stand 24" 29.00
Kensington System Saver Mac 65.00
A/B Box *(Specify Mac or MacPlus)* 62.00
Disk Case *(holds 36 Mac disks)* 19.00
Traveling Disk Case 8.00
Disk Drive Cleaning Kit 19.00
External Disk Drive Cover 8.00
ImageWriter or ImageWriter II Cover 9.00
Macintosh Dust Cover 9.00
Mouse Cleaning Kit w/Pocket 16.00
Mouse Pocket 8.00
Circular Polarizing Filter 31.00
Starter Pack *(includes Tilt/Swivel)* 53.00
Surge Protector 35.00
Tilt/Swivel 22.00
Control Center 62.00
Printer Stand 17.00
Copy Stand 22.00
Kette Group
MacNifty Joystick Convertor 35.00
MacNifty Stereo Music System MNS-200 75.00
MacNifty Stereo Music System MNS-300 *(Dolby,Bass,Treble)* 99.00
MacNifty A/B Switch 25.00
MacNifty A/B/C/D Switch 39.00
Kraft QuickStick III 49.00
MacMemory, Inc. MaxChill 39.00
Moustrak MousePad 7" x 9" Size 8.00
MousePad 9" x 11" Size 9.00
MPH Computer Products
MAC-B-COOL 99.00
N² Products Inc.
MacPlus to ImageWriter II Cable *(6 feet)* 19.00
MacPlus to DB-9 Adaptor Cable 19.00
MacPlus to SCSI Drive Cable 24.00
Optimum Computer Luggage
MacTote Mac Carry Case 60.00
PrintTote ImageWriter II Carry Case 60.00
Ribbons Unlimited
Available in Black, Blue, Brown, Green, Orange, Purple, Red, Yellow, Silver & Gold
ImageWriter Ribbon-Black 4.50
ImageWriter Ribbon-Color 5.00
ImageWriter Rainbow Pack *(6 Colors)* 25.00
ImageWriter II-Four Color Ribbon 12.00
Smith & Bellows
Hand Crafted Mahogany Disk Case: Holds up to 90 Diskettes 27.00
Hand Crafted Basswood Disk Case: Holds up to 90 Diskettes *(Natural or Stain)* 19.00
Systems Control
MacGard Surge Suppressor 55.00
X-10 (USA) Inc.
X-10 Powerhouse Computer Interface 65.00
Extra Modules *(For Lamps, Wall Switches, & Appliances)* 15.00

Books

Microsoft Press
Creative Programming in Microsoft Basic 15.00
Command Performance: Microsoft Excel 20.00
Excel in Business 18.00
Inside MacPaint 15.00
Macintosh Midnight Madness 15.00
MacWork/MacPlay 15.00
Microsoft Macinations 16.00
Microsoft Multiplan: Of Mice and Menus 14.00
Microsoft Works on Apple Macintosh 15.00
Presentation Graphics on Macintosh 15.00
The Apple Macintosh Book Vol. 2 15.00
The Printed Word 14.00

Ordering Instructions

VISA AND MASTERCARD ACCEPTED
To order, call us anytime Monday thru Friday 9:00 to 9:00, Saturday 10:00 to 6:00. For fast delivery if ordering by mail, send cashier's check, certified check or money order. Fortune 1000 & Government checks honored immediately. Personal and other company checks allow 2-3 weeks to clear. Mastercard & Visa, include card # & expiration date. Connecticut residents add 7.5% sales tax. Sorry, we cannot accept COD's. Purchase Orders: All merchandise FOB CT. and Handling. Please call *(203) 378-3662* for credit information and terms.

Shipping Charges: Software Only — $3.00 Minimum charge U.S. Mainland. U.S. Postal APO, and FPO add 3% *($5.00 Min.)*. Alaska or Hawaii add 6% *($10.00 Min.)*. Canadian orders add 10% *($15.00 Min.)*. Foreign Orders except Canada-Add 18% *($25.00 Min.)*.

Hardware — Please call for shipping charges.

Our Policy — We do not guarantee machine compatibility. All products are new and include factory warranty, therefore All sales are final. Defective software will be replaced by the same item only. Defective hardware will be replaced or repaired at our discretion. Prices & availability subject to change without notice. Products purchased in error, subject to 20% restocking fee. All returns must have an authorization number or they will not be accepted. Call *(203) 378-3662* to obtain one before returning defective products for replacement.

MW0101

PROGRAMS PLUS+

Visit Our New Showroom: Exit 32 Off I-95
Station House Square
2505 Main Street
Stratford, Conn. 06497
Telephone Hours: Monday-Friday 9-9;
Saturday 10-6
Showroom Hours: Monday-Friday 9-6;
Saturday 10-6

Orders Only TOLL-FREE **1-800-832-3201**



Your Macintosh is a very special computer, therefore, it deserves the best dust covers available. **Computer Cover Company** designs these covers specifically for each Macintosh component. Our workmanship and quality has been acknowledged by thousands of our discerning customers.

If you have tried vinyl, naugahyde or cloth dust covers, you will have already discovered for yourself why our covers are made of first quality 400 denier rip stop nylon. Our covers are water resistant and anti-static, they will not tear, crack or create lint problems. All seams and hems are double stitched to insure you years of lasting quality and worry free protection for you Macintosh.

MACINTOSH COVER SETS — BASE PRICE
(SEPARATE COVERS FOR EACH COMPONENT) (See below)
#M1B...Macintosh, keyboard, and mouse.....$19.95
#M1....Macintosh, keyboard, printer, and mouse....$27.95
#M2 ...Macintosh, keyboard, printer, external drive, and mouse.....$29.95

STAND UPS:
Universal printer stands designed to raise your printer for easy viewing and provide ample space below for paper storage.
Regularly $18.95 .....*w/Purchase of Cover Set Only* **$10.95**

IMAGEWRITER RIBBONS: Box of Six — 5 or Less
Black.....$21.95/$3.66 ea. — $4.50 ea.
Solid Colors.....$26.95/$4.50 ea. — $6.00 ea.
Multicolored I/W II.....$52.50/$8.75 ea. — $10.00 ea.

SLIP UPS:
Our own special mouse pad measures 8" x 9½". Help keep your mouse clean and rolling easy. Now four colors to choose from to accent your covers: Bone, Blue, Gray and Red. Regulary $9.95 .....*Direct Orders* **$6.95**

★★ **FREE — SLIP UP** w/Purchase of **COVER SET.** ★★

ORDER FORM — Complete and Mail To:
Computer Cover Co., P.O. Box 3080, Laguna Hills, CA 92654
Orders Only **(800) 235-5330** — Calif. & Inquiries **(714) 380-0085**

Macintosh set number _____ **Base Price** _____
Monitor: ☐ 128/512/Plus [NAC] ☐ Mac atop HD20 (add $1.00) [No Additional Charge]
Keyboard: ☐ 128/512 [NAC] ☐ Keyboard PLUS [NAC]
Printer: ☐ Imagewriter [NAC] ☐ Imagewriter II (add $1.00)
☐ Laserwriter (add $5.00) ☐ 15" Imagewriter (add $2.00) ☐ I/W II w/sheet feed (add $500)
Disk Drive: ☐ 400K [NAC] ☐ 800K [NAC] ☐ HD20 (add $1.)
Color Choice: ☐ Bone (similar to the Mac) ☐ Blue (royal) ☐ Tan ☐ Brown ☐ Platinum
Additional Items Ordered (description) — **Quantity** — **Price**

		$
		.
		.
		.
	Subtotal	.
	CA residents add 6% sales tax	.
	U.P.S. Ground (foreign orders/FPO/APO extra)	3.00
	Total	.

Name _____ Exp: ___/___
Address _____
Zip _____
Daytime Phone (___) _____
Payment enclosed ☐ Bill my Visa ☐ M/C ☐
Card # _____
Signature _____

Circle 620 on reader service card

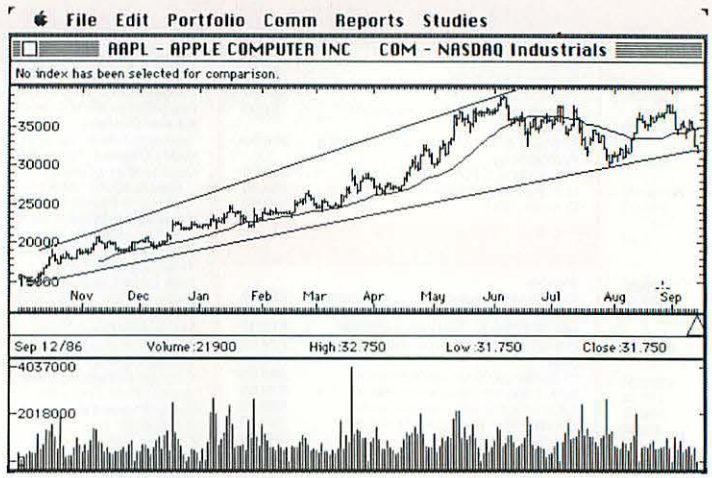


Figure 2
This technical chart from Market Pro *shows stock price, moving average (a smoothed-out record of prices), and support and resistance lines. When the price breaks past these lines, "technicians" believe that a new buying or selling trend has started.*

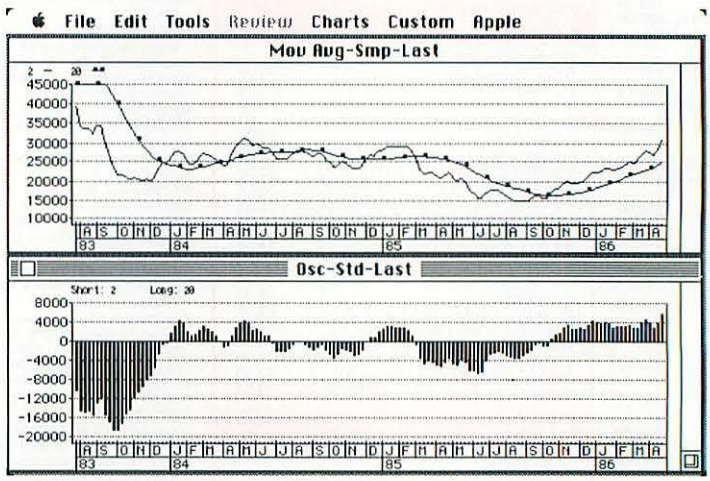


Figure 3
Profit Stalker II *can put two charts on the same page. These charts both report the difference between long-term and short-term moving averages.*

transfer it. This limitation is a major nuisance if you are investigating more than three or four stocks. The package assumes that you are familiar with the contents of a college-level business statistics text.

Get the Right Tool

If you have more than a half-dozen stocks, you probably need a portfolio manager. They're not too expensive considering the amount of money you probably have at stake, and the discipline of using the software may help you focus your interests and improve your investment results.

Stock analysis is not for the fainthearted. But if you have at least a semiprofessional interest in stock trading and want to move beyond brokers' tips, friends' advice, and speculation from newsletters, you'll probably find analytical software a useful adjunct to your current methods. One of the first things you'll discover is that the brokers' and newsletters' hot picks of the month are generated by programs no more sophisticated than the ones you can buy for a few hundred dollars.

You will also have the opportunity to participate in one of the great financial experiments of our times: it will be interesting to see whether the thousands of Mac and PC users buying and selling according to similar statistical criteria will ultimately skew the market as much as computer-timed institutional purchases currently do. □

See *Where to Buy* for product details.

tcp MAC CLASSIFIEDS

ORDERS ONLY
CALL TOLL FREE 1-800-468-9044
INFORMATION AND
PA ORDERS 814-234-223

SOFTWARE

SINESS & PRODUCTIVITY

Arbor
Paint $59.95
opos
plan and Excel Templates
ncial Planning $49.00
stment Planning $49.00
Planner '85-'86 ..... $39.00
ays
e Accounting $51.00
th Software
is 3+ $289.00
eral Accounting $219.00
land
ick w/phonelink ..... $CALL
tral Point
II Mac $24.00
ng Labs
to Riches $259.00
ighton
Spell+ $57.00
cket
et Graph $129.95
works $79.95
ktop Software
Base $94.00
Merge $47.00
Port ..... $CALL
Base,Merge,Port bundle $177.00
ital Etc.
ountant 2.0 ..... $99.00
Maccountant ..... $CALL
l-click
ulator construction set $59.00
FT
Print $24.95
Chart ..... $CALL
ertelligence
r Logo $77.00
rlisp ..... $CALL
rOPS5 ..... $169.00
ethought
naker $105.00
nder $82.00
den
mble $59.00
rabber w/Body Shop $29.00
er $45.00
sington
..... $29.00
s for Headlines $40.00
ered
Desk ..... $CALL
ng Videotext
tank 128 ..... $59.95
tank 512 ..... $97.95
hatten Graphics
y Set Go V2.1 ..... $99.00
gahaus
or our low price on all Megahaus
cts!!!
rosoft
..... $219.00
olan $105.00
..... $109.00
..... $109.00
..... $87.00
an ..... $CALL
..... $72.00
..... $CALL
nhancer $149.00
ogram
's & Sense $89.00
ast $40.00
din
h 512 ..... $99.00
rcrunch ..... $CALL
ntir
pe $26.00
lash $26.00
htree
P/AR $83.95

Sartori
Bulk Mailing $77.00
Sierra Information Systems
Accountants Choice ..... $CALL
Sierra-on-line
Mac One Write Acct. modules $133.00
Silicon Beach Software
Silicon Press ..... $CALL
Accessory Pak 1 ..... $23.00
Softstyle
Decision Map $79.00

GAMES & EDUCATIONAL

Broderbund
The Toy Shop ..... $CALL
Print Shop ..... $CALL
Electronic Arts
Archon $26.95
Autoduel $33.95
Chessmaster 2000 ..... $29.95
D-Music Constr. Set 1.0 ..... $33.95
D-Music Constr. Set 2.0 ..... $67.95
Financial Cookbook $33.95
Golden Oldies Vol. 1 ..... $23.95
One-On-One $26.95
Patton vs Rommel $26.95
Pinball Constr. $26.95
Seven Cities of Gold $26.95
Sky Fox $26.95
Ultima III $39.95
Ultima III Cluebook ..... $ 9.95
Hayden
SAT $55.00
Sargon III $29.95
Infocom
Zork II or Zork III $26.00
Zork I, Seastalker, Enchanter, Hitch-hikers Guide, Planetfall, Wishbringer, The Witness,Cutthroats $23.00
Microsoft
Entrepreneur $31.00
Flight Simulator $32.95
Softsync
Personal Acct. $52.00
Software Publishing
PFS File & Report $97.00
Telos
Filevision $104.00
T/Maker
ClickOn Worksheet $45.00
ClickArt Effects $27.95
ClickArt Publications $27.95
ClickArt Letters $27.95
ClickArt Pers.Graphics $27.95
Miles Software
Harrier Strike Mission $29.00
Macatack $29.00
Overloads ..... $CALL
Fusillade ..... $CALL
Macwars ..... $CALL
Mindscape
SAT $45.00
Deja Vu $29.00
Racter $26.00
Balance of Power $30.00
Rambo $24.00
The Mist $24.00
View to Kill $24.00
PBI
Feathers & Space $21.00
Strategic Conquest $29.00
Fokker $35.00
Silicon Beach
Airborne $19.95
Enchanted Sceptre $22.00
Spectrum Holobyte
GATO $28.00
Orbiter $34.95
Tellstar L1 ..... $28.00
Tellstar L2 ..... $44.95

HARDWARE

Assimilation
MacPort Adapter $75.00
MacTurbo Touch $77.00
Numeric Turbo $129.00
Beck-Tech
Fanny Mac $79.95
Microsoft
Printer Enhancer $149.00

MODEMS
Prometheus
Promodem 1200m $327.00
(includes software)
Prentice
Popcorn X-100 ..... $251.00
TAPE DRIVE BACKUP
LoDOWN
T20, T-60 ..... $CALL
Mirror Tech 20 meg tape backup .... $CALL

PRINTERS
EPSON
All models in stock
CALL FOR LOWEST PRICES !!!
PANASONIC
1091 ..... $229.00
1092 ..... $329.00
1592 ..... $CALL

STAR
A NEW STAR IS BORN NX-10
$CALL FOR PRICE AND AVAILABILITY
Star to Mac Interface $323.95
SG-10, SD-15, SR-10, SR-15 .... $364.00
SD-10 ..... $CALL
SG-15 ..... $CALL

ACCESSORIES

Blohard
MACFAN $99.95
I/O Design
MAC+ Bag $69.95
Imagewriter Bag $49.95
Imagewriter II Bag $54.95
Innovative Concepts
Flip-n-File Micro (holds 25) $7.95
Flip-n-File (holds 40) $15.95
Innovative Technologies
Easel (holds 20 disks) $14.00
Disk Directory (holds 32) $19.95
Pocket Pack $9.95
Library $29.95
Compubag for Mac 512, 128 .. $54.00
(has enough space for hard drive)
Compubag for Mac+ ..... $CALL
Mousepad $5.95
Kensington
Swivel $20.00
Filter $29.00
Control Center $59.00
A-B Box $59.00
Surge Supressor $32.00
Maccessories starter pak $53.00
Mouse cleaning kit & pocket ... $16.00
N2 Cables $call for price & configuration

DISKS

SONY	(10) SS/DD	$17.95
	DS/DD	$26.95
MAXELL	(10) SS/DD	$16.95
	DS/DD	$24.95
FUGI	(10) SS/DD	$15.95
	DS/DD	$23.95

Regular Hours
East Coast Time
M-F 9am-8pm
Sat 10am-6pm
X-mas Hrs Dec 1-23
M-T 9am-10pm
Fri 9am-8pm
S-S 10am-6pm

Software orders over $50.00 will be shipped FEDERAL EXPRESS (yes, even with *these* prices)
You only pay TCP's standard shipping charge of $4.00 per order. This offer also valid on peripherals and accessories under 8 pounds. Orders arriving before 11:00 AM our time will be shipped out same day.*
FEDERAL EXPRESS

MICROSOFT.
The High Performance Software™
EXCEL $219.00
FILE $109.00
WORD $109.00
WORKS ..... $CALL

Target Software
MacLightning $52.00 Medical
Thesaurus ..... $32.00 or Legal
Voila ..... $CALL Dictionary $67.00

cricket software
GRAPH $129.95
STATWORKS .. $87.95

Tempo FROM AFFINITY
..... $57.00

BORLAND INTERNATIONAL
Reflex/Mac $64.00

Odesta Corporation **HELIX**
DOUBLE HELIX ..... $CALL

Ashton-Tate
Dbase Mac ..... $CALL

BLYTH SOFTWARE
OMNIS 3+ $279.00

LIVING VIDEOTEXT
MORE $159.00

MACINTOSH HARD DRIVES

All hard drives shipped Federal Express for $4.00 shipping.

MIRROR TECHNOLOGIES, INC.
MAGNET 20X
SCSI Interface ..... $CALL
MagNet 40/40, MagNet 30X,
Magnum 800, Magnum Tape
Backup Available Here.
CALL FOR LOWEST PRICE EVER!

HERE'S THE LoDOWN ...
20 Meg Hard ..... $CALL
SCSI Interface

HARD DRIVES!!
Other manufacturers of Hard Drives are available at TCP
Call for price on Micah and other brands.

MAC BOTTOM



PCPC MACBOTTOM 20
HARD DRIVE $879.00
SCSI Version Available $869.99

3 1/2" DISKS BOXED IN 10s

# OF BOXES		1-4	5-9	10+
SONY	SS/DD	13.95	13.45	12.95
	DS/DD	19.95	19.45	18.95
MAXELL	SS/DD	13.45	12.95	12.45
	DS/DD	19.95	19.45	18.95
FUJI	SS/DD	13.45	12.95	12.95
	DS/DD	18.45	17.95	17.45
VERBATIM	SS/DD	14.45	13.95	13.45
	DS/DD	19.95	19.45	18.95

- If through some oversight we don't have the lowest price, we would appreciate the opportunity to beat it. If we can, you will get the benefit of our Federal Express shipping on software orders over $50.00.
- We accept Mastercard, Visa, COD and mail orders
- Purchase orders are accepted from qualified corporations and institutions. Minimum order of $500.00 required.
- No sales tax on orders outside of PA.
- Buy with confidence. We honor manufacturers warranty.

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal check to clear.
Shipping: $4.00 for software and accessories/ $10.00 for printers and color monitors/ $8.00 for disk drives and other monitors/ Add $3.00 per box shipped COD. Call for other shipping charges. Additional shippin required on APO, FPO, AK, HI, and foreign orders.
Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA. Manufacturer's warranty honored with copy of our invoice. **ALL SALES ARE FINAL.** Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

TUSSEY COMPUTER PRODUCTS
P.O. BOX 1006
STATE COLLEGE, PA 16804
Circle 483 on reader service

I don't want to spend 20 hours learning **EXCEL**

Then get **EXCELLERATE**

What's that?

A series of **one-hour** courses on Excel

How do they work?

Instructors on the **EXCELLERATE** audio tape guide you through lessons contained on the **EXCELLERATE** Practice disk.

Oh, hands-on training using the actual Excel program! Sounds Great!

It is great! And a bargain at only $29.95 a course.



Wow! How can I get **EXCELLERATE?**

Just call

800-453-6500



EXCELLERATE

Courses include:

1A Fundamentals of Excel for First Time Spreadsheet Users
1B Fundamentals for Experienced Spreadsheet Users
2 Creating Business Graphs
3 Adding power to your Spreadsheet
5 Building & Using Macros
6 Linking and Consolidating Spreadsheets



Personal Training Systems

Dealer Inquiries Welcome

408 559-8635

Excel is a trademark of Microsoft Corporation. Excellerate is a trademark of Personal Training Systems.

Circle 560 on reader service card

Updates

This list brings you highlights of software recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.

Acta version 1.1 scrolls when you pull the pointer to the extreme top or bottom of the window; the list of fonts also scrolls. You can also designate an *Acta* file to open automatically on start-up. Symmetry Corporation, 761 E. University Dr., Mesa, AZ 85203, 800/624-2485, 602/844-2199 in Arizona. Original disk swap or $10; $59.95 new.

Fluent Laser Fonts 1.0 versions download automatically and are compatible with the new (3.0 and later) versions of LaserWriter system software and *PageMaker* version 1.2. There are now six disks offering eight families of type; Sans Serif and Bodoni come on separate disks, so call to learn about upgrading options for those fonts. Casady Company, P.O. Box 223779, Carmel, CA 93922, 408/646-4660. Original disk plus $7 per disk; $69.95 per disk new.

FullPaint version 1.0 Enhanced includes the ColorPrint color-printing utility and removes copy protection. The company asks owners not currently registered to order upgrades by mail by returning registration card, dated invoice, or other proof of purchase. FullPaint Upgrade, Ann Arbor Softworks, 5249 Lankershim Blvd., North Hollywood, CA 91601, 818/769-8615. Free; $99.95 new.

Mac3D version 2.0 adds lighting from six sources, PostScript gray-scale shading, a customized tool palette, and orthographic projections, plus custom scaling and commands for importing and exporting graphics in PICT format. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430, 800/858-9565, 312/957-3475. $30; $249 new.

Plot-It version 2 works with documents from *MacDraw* and *MacDraft* version 1.2 in PICT format and with the Clipboard. It's HFS compatible and supports the Apple plotter and various Hewlett-Packard and Houston Instrument DMPL plotters in paper sizes of up to 36 by 48 inches. Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998. $30; $125 new.

Stat80 version 2.10, an upgrade for both the standard and professional editions, adds several types of ANOVA analysis, including N-way, unbalanced factorial, factorial repeated measures, and unbalanced repeated measures. Statware, P.O. Box 510881, Salt Lake City, UT 84151-0881, 801/521-9309, 800/782-8807. Original disk only for those who purchased after August 15, 1986, original disk plus $50 or $75 without disk for earlier purchasers; standard $249 new, professional $399 new.

Word Handler version 1.6 allows pasting in text and graphics through the Clipboard, the Scrapbook, and other desk accessories. Then the graphics can be resized or moved horizontally. Conversions from *MacWrite* are faster. Advanced Logic Systems, Attn: Clipboard Upgrade, 1283 Reamwood Ave., Sunnyvale, CA 94089, 408/747-1988. Original disk plus $2; $79.95 new. □

No matter what business you're in, publishing is costing you a bundle.

If your business is like 200,000 others in this country, you're producing more printed material, page for page, than most publishing houses. And spending **up to 10 percent** of your revenues to do it.

You can learn how to cut these costs in half by attending the Corporate Electronic Publishing Systems™ (CEPS™) Show and Conference, March 3–5, 1987, at McCormick Place in Chicago.

The CEPS™ Conference will feature:

- A comprehensive program of sessions covering the full range of CEPS solutions: desktop, workstation and dedicated systems
- Special sessions tailored to meet the needs of all corporate end-users, from corporate executives to entrepreneurs, DP professionals to technical writers
- Focused instruction by top industry experts and experienced CEPS™ users.

And, at the show . . .

Hands-on demonstrations of their latest systems by Apple, Interleaf, Xerox, Kodak, AT&T and other leading suppliers.

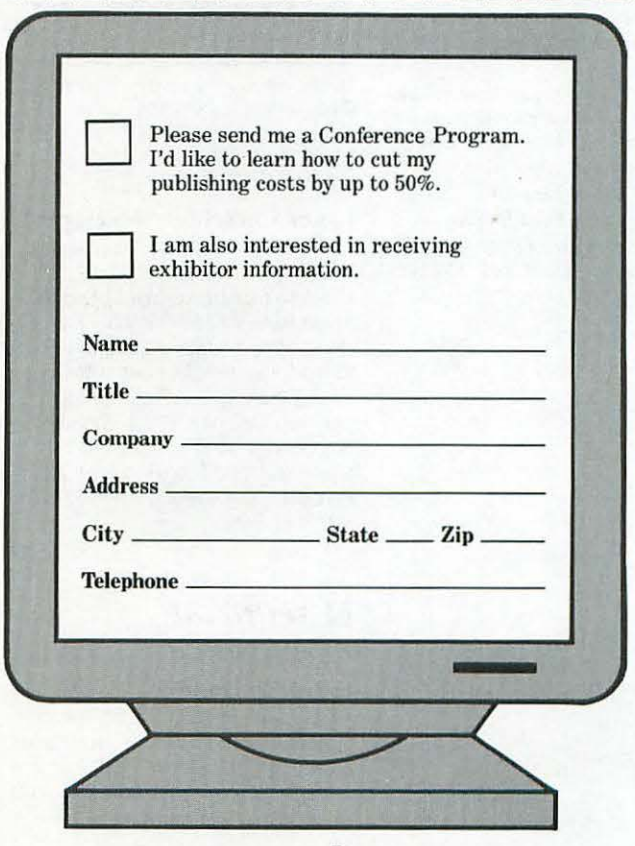
Find out how companies like yours are getting returns of up to 60 percent on their CEPS™ investments!

Take advantage of early bird discounts by returning the coupon below to:
CEPS™
P.O. Box 597
Chester, NY 10918-0597
or by calling Customer Services at 203-964-8287.

Corporate Electronic Publishing Systems:™

The Show and Conference

March 3–5, 1987
McCormick Place
Chicago, Illinois



☐ Please send me a Conference Program. I'd like to learn how to cut my publishing costs by up to 50%.

☐ I am also interested in receiving exhibitor information.

Name _____

Title _____

Company _____

Address _____

City _____ **State** ____ **Zip** ____

Telephone _____

E

Circle 623 on reader service card

Macworld Directory

The Macworld Directory is a comprehensive listing, by category, of products and services available for the Apple Macintosh. It provides advertisers with a low-cost advertising alternative and our readers with an easy reference guide.

FORMAT: The standard format includes a product ID, a 300-character descriptive ad, and a company name, address, and telephone number.

Advertisers may choose among categories already in use, or they may create their own. Display advertisers can cross-reference their current ad to the Macworld Directory for increased exposure.

RATES: Listings are accepted for a three-time consecutive insertion at a rate of $775. We offer a six-time insertion at $1320 that reflects a 15% frequency discount. Listings must be prepaid (except for established display advertisers) upon submission of ad copy. Checks, money orders, Visa, and MasterCard are accepted.

DEADLINE: For copy deadlines and further information please contact Niki Stranz, your Macworld Directory Account Manager, at 415/546-7722 or 800/435-7766 (800/435-7760 in California). Please send copy and prepayment to the Macworld Directory, 501 Second St. #600, San Francisco, CA 94107.

■ Accessories

○ Cables

Mac Lock/Mac Cables
Mac Lock, finest security kit for Mac/+, secures Mac, keyboard, mouse, 2nd drive, modem, & printer. Attractive red vinyl-covered steel 3/16" cables. Lock included. No tools req. $-back guarantee. Also, IBM, Apple, etc. $40. Mac Cables provide any length custom cables for Mac/+ (incl. keyboard) or almost any computer need. $20 & up.
Mac Products, 20231 San Gabriel Valley Dr., Walnut, CA 91789, 714/595-4838

○ Furniture

Mobile Mac Workstations
New Mac model of the Mobile Station series of computer workstations will allow the full Mac system with printer to be moved into place aside a desk or rolled from room to room. The small 24W × 24D size is ideal for tight work areas. Wood or laminates. Call or write for catalog and more information.
Microland Furniture Co., Inc., 17 Madrone Ave., San Anselmo, CA 94960, 415/485-9758

○ Supplies

Laser Cartridge Recharge!
$$$Save a lot of money recharging laser-printer toner cartridges for Hewlett-Packard LaserJets, Canon, Apple LaserWriter, Corona, QMS. Recharged cartridges are reconditioned to work like new but last 20% longer. Money-back guarantee. Send $40 per cartridge plus $3 s/h. Monthly discounts.
Laser Systems, 7 North Main, P.O. Box 407, Kaysville, UT 84037, 801/544-3090

■ Artificial Intelligence

ExperTelligence
A full range of languages & Expert Systems Shells to meet your needs. From ExperCommonLisp™ to ExperProlog II™ incl. Le-Lisp,™ ExperLisp,™ & ExperLogo.™ ExperFACTS™ to ExperOPS5.™ ExperTelligence has a range of affordable solutions. The newest ExperCommonLisp is the first & only compiled, double-clickable, object-oriented, toolbox-compatible "Common Lisp." ExperProlog II is the int'l standard for Prolog.
ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871

■ Expert Systems

ExperFACTS:™
A flexible expert-system-building tool. Written by Mc-Systems, ExperFACTS™ features backward and forward chaining, meta-level control, partitioning of knowledge base, and a software hook that runs any Lisp function, including graphics!
ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871

ExperOPS5-Plus™
An ExperLisp™ implementation of the well-known OPS5 expert-system-building tool. It was implemented by Science Applications International Corporation. ExperOPS5™ teams up with ExperLisp™ and the Macintosh to deliver performance that rivals $30,000 to $50,000 Lisp machines.
ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871

■ Hardware

○ Bar Code

Bar Code/MagCard Readers
The PC-380 Bar Code & PC-580 Magnetic Stripe (credit card) Readers have been designed to interface with the Apple Macintosh, are easily connected between the keyboard & the CPU, & require neither additional software nor an RS-232 port. A powerful but simple program for printing Code 39 bar codes is also avail. for both ImageWriter & LaserWriter.
TPS Electronics, 4047 Transport St., Palo Alto, CA 94303, 415/856-6833

○ Data Acquisition

"Real World" Access
Add measurement and control capabilities to your Mac with the ADC-1. This easy-to-use RS-232 peripheral includes 16 analog inputs (13-bit), 4 digital inputs, 6 outputs, and a BSR controller. Use for laboratory, industrial, and home monitoring. $449. ADControl software $45. Sensors available.
Remote Measurement Systems, 2633 Eastlake Ave. #200, Seattle, WA 98102, 206/328-2255

○ Hard Disks

Whisper Hard Disk Drives
Get the fastest hard disk for your Mac Plus with a *Whisper* 20-, 30-, or 40-megabyte SCSI hard disk system. Incl. backup and diagnostic software, manual, & cable. Attractive case fits neatly under Mac. 1-yr. warranty, 30-day money-back guar.
- *Whisper* 20 $645
- *Whisper* 30 $895
- *Whisper* 40 $1295
- *Whisper* Tape $795

Whisper Microcomputer Products, P.O. Box 162504, Austin, TX 78716-2504, 800/622-2210, 512/329-0303 in TX

○ Memory Upgrade

Memory Enhancements
Upgrade your Mac to 512K, 1024K, or 2048K of contiguous memory. SCSI port & fans available. Factory flow-solder techniques used for high reliability. 120-day warranty. Local 20-minute installation or mail order. Dealer inquiries welcome. Call for pricing and information.
Ehman Engineering, 115 Apache Dr., Evanston, WY 82930, 800/257-1666

○ Networking

PhoneNET Connector
AppleTalk compatible network connector can use existing telephone modular components & wire to

create permanent, reliable, 3,000 ft. AppleTalk networks. Also available AppleTalk repeater, star controller, IBM Cabling System adapter, Apple to PhoneNET adapter, & software for network testing & management.
Farallon Computing, 1442 A Walnut, #64, Berkeley, CA 94709, 415/849-2331

○ *Video*

MacMonitors/Projectors
• 17- & 23-inch hi-res monochrome monitors w/ antiglare, white phosphor, vari scan. When your Mac must be seen in the classroom, trade show, office, etc. Only $1095 & $1295.
• Projector systems for the ultimate in Mac viewing pleasure from $3895.
• Rental MacMonitors & Projectors avail. • Dealer inquiries welcome.
National Data Systems, 2419 Rutland Dr., Austin, TX 78758, 512/837-1760, 800/531-5143, 800/252-8286 in Texas

Mentauris Corp.
Specialists in Macintosh video interfacing for over two years. Mentauris offers a wide range of products to satisfy any Mac or Mac Plus video interfacing need: our original, high-res Composite Video Adapter; our new, "no-drill" CVA; monochrome and color NTSC scan converters; Mac disassembly hand tools.
Mentauris Corp., 1658 IH 35 S, P.O. Box 1467, San Marcos, TX 78666, 512/396-1565

■ *Insurance*

Safeware
If your computer is important to you, insure it! SAFEWARE provides full replacement of hardware, media, & purchased software. As little as $39 a year covers fire, theft, power surges, earthquake, water damage, auto accident. Call 8 a.m. to 8 p.m. Mon. thru Fri.; Sat. 9 a.m. to 5 p.m.
Safeware, The Insurance Agency Inc., 2929 N. High St., P.O. Box 02211, Columbus, OH 43202, 800/848-3469, 614/262-0559 in Ohio

Data Security Insurance
The "all risk" Personal Computer Policy from DSI includes essential coverage not available with other policies: protection against loss of data (even from accidental erasure), loss of custom programs, and fraud. Especially intended for business computers. Coverage can be bound by telephone, 9 a.m. to 4 p.m. mountain time.
Data Security Insurance, 4800 Riverbend Rd., P.O. Box 9003, Boulder, CO 80301, 303/442-0900, 800/822-0901

■ *Publications*

Microcomputer Books
• *Mac Midnight Madness* $17.95
• *Mac Spreadsheets: Using Microsoft Multiplan, Chart & File* $15.95
• *Microsoft File* $17.95
• *Microsoft Macinations* $18.95
• *Planning Big with MacProject* $15.95
• *Presentation Graphics on the Apple Mac* $17.95
• *The Printed Word* $16.95
MC/Visa/AE. FREE Directory.
Micro Books, P.O. Box 4068, West Richland, WA 99352, 800/628-2828 ext. 833, 509/967-5084 in Washington

■ *Services*

○ *Data Conversion*

Electronic Data Conversion
Conveniently translate data files from mainframes, minis, dedicated word processors, typesetters, & PCs (word processing embedded codes, database structures & spreadsheet reports & formulas) to Mac or almost any system. Ultimate technology. Nation's leading firms use our invaluable services!
CompuData Translators, Inc., 6565 Sunset Blvd. #301, Hollywood, CA 90028, 213/462-6222

Tape/Disk Conversions
Conversion services for your Macintosh, to or from over 800 computer systems:
• Mag tapes
• Microcomputers
• Word Processors
• Typesetters
Our conversion capabilities include to or from 3½-inch, 5¼-inch, and 8-inch disks & mag tapes.
Pivar Computing Services, Inc., 165 Arlington Heights Rd., Dept MC, Buffalo Grove, AL 60089, 312/459-6010

○ *Desktop Publishing*

MacTypeNet™
Mac/PC typesetting. Disk or modem. 300-dot LaserWriter™ output; 635-, 1270-, or 2540-line Linotype™ L300P output. Composition, page makeup, printing/bindery services. Hardware/software sales, services, and support; beginning and advanced training and seminars for Macintosh, PC, and Linotype 100/300 users.
MacTypeNet™, P.O. Box 52188, Livonia, MI 48152-0188, 313/477-2733

Laser Print • Disk Conv.
Laser-perfect printouts from your Mac, Apple II, IBM, etc. Send us your text and graphics on disk or by modem. 24-hr. turnaround in most cases. Disk conversions, hardware & software sales, services & support. Mailing list maintenance, full offset printing and laminating also available. All services at surprisingly low cost!
DaVinci Business Services, 6175 N.W. 57th St. #213, Fort Lauderdale, FL 33319, 305/721-0216

Laser Printing Services
LaserWriter (300-dpi)/Linotype L100 (1270-dpi) output of your Mac/IBM files. Disk or modem. $6 per page ($3.50 volume discount). Desktop publishing specialists in consulting & design services. Hardware/software sales. Xerox Ventura Publisher for sale at low, low price. Ask for our free desktop publishing guide.
Laser Printing Services, 26058 W. 12-Mile Rd., Southfield, MI 48034, 313/356-1004 (MI), 800/722-3475 (nat'l)

○ *Graphics/Printing*

Laser Typesetting
Use your Mac for desktop publishing! Newsletters, brochures, and other graphics output at professional quality using your Mac and our Linotype™ typesetter or Apple LaserWriter. Great savings and 24-hour turnaround via disk or modem. Graphic design also available from our staff artists. Write or call:
Spectrum Arts, Ltd., 1823 Eutaw Pl., Baltimore, MD 21217, 301/225-7372

○ *Publishing/ Communication*

Office Link™
Mac/IBM compatible Linotronic typesetting via disk or modem. Tech support for Apple, Aldus, Microsoft, etc. Text/graphics capabilities & error-free transmission (local access # avail.). Provides newsletter design layouts, electronic mail, graphics library, custom data bases, & more. Office Link™ delivers a total solution to meet your company's publishing & communication needs. Easiest to use communication software or $-back.
Office Link, 345 Montgomery Ave., Bala Cynwyd, PA 19004, 800/345-0133

○ *Typesetting*

Save $
Linotype L100 output for Mac disks at the lowest prices. $6 per pg. ($4 per pg. after 100 pgs.) LaserWriter output $1 per pg. Modem service avail. at no extra charge. We sell LoDown & Mirror Technologies, SCSI drives at the lowest prices. IBM output for *Word, WordStar, & MultiMate.* Complete offset printing & bindery services avail. at low, low prices.
Laser Printing Services, 26058 W. 12-Mile Rd., Southfield, MI 48034, 313/356-1004

CONGRATULATIONS!!
You are a pioneer in electronic publishing. Now we can make your Mac or PC document look EVEN BETTER ... OVERNIGHT!! *Laser typesetting (Linotronic 100) or printing* services are a phone call away. We can accept your files by modem 24 hours a day, 7 days a week; or you can mail us your diskettes. Call today for details!
Beukers Promotions, Flowerfield Bldg. #7, St. James, NY 11780, 516/862-7500, modem: 516/862-7576

■ *Software*

○ *Accounting*

BPI General Accounting
A complete accounting system that includes automatic double-entry accounting & check writing, three subsidiary ledgers, six specialized journals, financial reports, default options, a "select" menu, the ability to export accounting data to productivity tools using the *BPI Productivity Connection.*
BPI Systems, Inc., 3001 Bee Cave Rd., Austin, TX 78746, 800/531-5252

○ *Apple Emulator*

II in a Mac™ Version 2.0
BELIEVE IT ... a complete working Apple II computer inside a Mac.
- Run Apple II+/e/c software without modification!
- Convert Apple II data into Macintosh data & vice versa.
- Develop Apple II software using integer/Applesoft BASIC or ML.

II in a Mac supports hard disks, DA's, Switcher™, & UniDisk. Avail. NOW! Only $89.95.
Computer:applications Inc., 12813 Lindley Dr., Raleigh, NC 27614, 919/846-1411

○ *Architecture*

MacPerspective™
Allows architects, draftspeople, and artists to rapidly construct perspective drawings of houses, buildings, or other objects. Viewpoint can easily be changed. Drawings can be printed in any size up to 100 inches. Easy to learn and use. Fast, professional program with many features, thorough manual. $149.
B. Knick Drafting, 313 Marlin Pl., Melbourne Beach, FL 32951, 305/727-8071

Perspective Drawing
GridMaker™ persective grid construction set. Create a variety of 3-dimensional grids that can be used within *MacDraw* or *MacDraft* as a guide for perspective drawing. Grid shape, dimensions, line density, rotation, and perspective are independently controlled. *Switcher* compatible $49. Visa/MC.
Folkstone Design Inc., P.O. Box 86982, N. Vancouver, B.C., Canada V7L 4P6, 604/986-8060

○ *Backup/Restore*

HFS Backup™
Back up (archive) data from your hard disk. Back up/restore the entire disk, selective files, or changes only. Includes/excludes files based on name, class, or data modified. Creates backup templates, saves/prints file list (hierarchically by folder or alphabetically by file). $49.95. MC/Visa or at your dealer.
Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33634, 813/884-3092, 800/622-2888

MacLibrarian-HFS
This no-nonsense HFS-compatible backup utility is powerful and easy to use. *MacLibrarian* backs up, catalogs, & restores valuable disks, folders, & files.
- Backs up any size folder or file
- Saves time and reduces the risk of losing valuable data
- One 400K disk inventories 4900 files & backups
- Only $79.95

Crystal Canyon Computing, Inc., P.O. Box 7161, Las Cruces, NM 88006, 505/522-6176

○ *Billing*

Invoicing/Job Costing
Office Productivity System™ (OPS). For professionals that bill based on time-use. Includes invoicing, timekeeping/productivity reports, job budget/cost tracking, client database with mail merge and accounts receivable. Multiuser capable. 512K Mac with hard or external drive. Avail now for $475.
Applied Micronetics, 3 Burnt Oak Circle, Lafayette, CA 94549, 415/283-4498

○ *Communications*

Tekalike
A VT-100 & Tektronix terminal emulator for text & graphics; emulates text terminals (tty, VT-100, VT-640, Tektronix 4105) &/or graphics terminals (Tektronix 4006, 4010, 4012, 4014, 4016, 4105, & the VT-640). Compatible with screen editors. Supports LaserWriter, plotters, *MacDraw* & *MacPaint* output; desktop publishing compatible. $250.
Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998

○ *Desktop Publishing*

DrawArt™
A library of "publishing quality" graphics in *MacDraw* files. More than 150 images in the categories of Publishing, Clip Art, 3-D/CAD, Drafting, Cartoons, & Drawings. *DrawArt*™ is "Smart-Art." Customize sizes, scales, patterns, borders & still retain image quality using ImageWriter or LaserWriter. Req. *MacDraw* & 512K. Order from us. List: $49.95. Visa/MC.
Desktop Graphics, 400 Country Dr., Ste. H, Dover, DE 19901, 302/736-9098

○ *Educational*

Gradebook/Test Generator
MICROGRADE–flexible course & grading, 350 students and 100 assignments per class, prints stats & various reports. Ideal for any grade level. MICROTEST II–create, update, generate, & store exam materials. Easy question entry, large database, multiple test versions. Free brochures–$5 Demos.
Chariot Software Group, 3659 India St. #MD1, San Diego, CA 92103

Religious & Graphics Series
- *Scripture Bits* (Bible calendar) $22

MacConcord (N.T. concordance) $42.95
MacScripture (Old & N.T.) $140
- *Religious Art Portfolio* $24.95
- *Electro Bits* (circuit graphics) $24.95
- *Orlando à la Carte!* (dining guide) $19.95 *MacMundo* (newsletter disk in Spanish) $8
- English or Spanish

Medina Software, Inc., 2008 Las Palmas Circle, Orlando, FL 32822, 305/281-1557

MacANATOMY
A complete electronic atlas of human anatomy in *MacPaint* document form. The drawings may be modified and merged into *MacWrite* documents using the Clipboard. Comprised of four volumes, available singly or as a collection.
MacMedic Publications, Inc., 5805 Westheimer, Houston, TX 77057, 713/977-2655

measureUP™ Testing
measureUP is the first test-generation system to fully utilize the Mac's powerful desktop publishing capabilities. Combining graphics, word processing, and database management, measureUP enables you to produce better tests more easily than ever–*we guarantee it!* Call today for the best in testing!
Logic eXtension Resources, 9651 Business Center Dr., Ste. C, Rancho Cucamonga, CA 91730, 714/980-0046

Children's Programs
Exceptional graphics, multiple activities & difficulty levels.
- *Macrobots* (Preschool-6 yrs.) 5 talking learning games $49.95
- *Animal Kingdom* (6-10) Science & language arts $49.95
- *Read-a-Rama* (5-9) 2 disks of reading programs $59.95
- *Math Wizard* (5-12) 4 math games $49.95
- *Fraction Action* (8 & up) talking arcade game & tutorial $49.95
- *Decimal Dungeon* (9 & up) $49.95 • MC/Visa/AE–free catalog.

Unicorn Software Co., 2950 E. Flamingo Rd., Ste. B, Las Vegas, NV 89121, 702/737-8862

Brainchild Grade™ Book
Unique graphic interface, like paper grade book, extremely easy to use. Total integration of spreadsheet, database, & report-generating software. Free-form class structure, enormous capacity, & speed! Complete stats & graph pkg. Intricately detailed user's manual. Value-priced at $25. No other pkg. comes close!
Brainchild Corp., avail. thru the Kinko's Academic Courseware Exchange. To order, call 800/235-6919, 800/292-6640 in California

Need help studying?

Learning Tool™ is designed to help you study. *Learning Tool* uses the principles of cognitive psychology to help you learn any subject, from philosophy to engineering. *Learning Tool* is an electronic notebook that helps you organize class notes, study for exams, write term papers, and more. 512K, $50, MC/Visa.
Arborworks, Inc., 2540 Pittsfield Blvd., Ann Arbor, MI 48104, 313/973-0612

○ *Engineering*

Digital Logic Design Aid

LogiWorks is an interactive digital logic drawing and simulation package for the Macintosh. Features:
- built-in library of common gates, flip-flops, etc.
- user-defined devices, PROMs and PLAs
- adjustable device delays
- 3-state and open-collector devices
- produces timing diagram of selected signals
- $159.95 (U.S.) • 128K version (no user-defined devices) $79.95 (U.S.)

Capilano Computing, 300-1120 Hamilton St., Vancouver, B.C., Canada, V6B 252 604/669-6343

Structural

Analysis & design programs. Any # of nodes, elements, loads. Structure, load, tension, shear, moment & deflected shape diagrams, in & out text, section table, more. Full mac interface. FRAME-MAC (2-D frames) $495; BEAMAC II (continuous beams) $295; BEAMAC (simple beams) $95. $-back guarantee. Free support.
Erez Anzel, 5800 Arlington Ave. #5T, Riverdale, NY 10471, 212/884-5798

Scientific Plotting Package

SoftWear™ *Plot* produces publication-quality plots from any multi-column ASCII file (e.g., program ouputs, text editors, spreadsheets). Linear or log format in either axis, overlays, zoom and on-line measurements, custom labels, and tokens. Number of points limited only by disk space. Print or save as *Paint* file for further enhancement. $49.95 + $3 s/h.
SoftWear Products, 7230 Oliver St., Lanham, MD 20706, 301/577-9207

Finite Element Analysis

MSC/pal for 3-D static & dynamic analysis of structures comprised of beams, plates, & scalar elements, with concentrated, gravity, and pressure loads. 3-D graphics include undeformed/deformed overlays, deformed animation, and XY plots. Executable demo with full doc. $45. See our ad in Dec. '86 *Macworld*.
The MacNeal-Schwendler Corporation, 815 Colorado Blvd., Los Angeles, CA 90041, 213/259-3888

○ *Engineering/Process*

Engineer's Aide

- Pipeline/ductwork sizing
- Pump/fan/compressor sizing
- Heat exchanger sizing
- Orifice/control valve sizing
- Project financial analysis
- Conversion calculator
- Specification writer

Pull-down menus, pop-up help window, single-screen entry & results—all for $395 (intro. price—$-back guarantee). Mac interface for IBM & Mac.
Engineering Programming Concepts, P.O. Box 925, Camarillo, CA 93011, 805/484-5381

○ *File Server*

Macserver—CPM file server

Finding your CPM machine used as an electronic doorstop now that the Macintosh has stolen the show? Searching for an inexpensive AppleTalk network file server? Macserver supports multiple MFS/HFS volumes, *Wordstar/MacWrite* translation, & file sharing. Sooner or later you're going to have to serve somebody. For CPM systems, the time is now, & that someone is the Mac!
Software Resources, P.O. Box 1748, Dahlgren, VA 22448, 703/663-3589 or 703/373-2200

○ *Financial*

MacMoney™

Gain control of your finances with this record keeper & financial planner designed for the Macintosh™ with your needs in mind. Easy transaction entry. Print checks, multiple reports, & graphs. Transfer data to a text file for extra benefits from *Excel*™ or other programs. Introductory price $74.95 + s/h. Req. 512K.
Survivor Software Ltd./w, 11222 La Cienega Blvd. #450, Inglewood, CA 90304, 213/410-9527

Financial Decisions

GenMicronics, a leader in financial analysis software, has introduced a powerful package for Excel™ owners, which is a must acquisition for all in commercial, consumer, real estate, and mortgage banking, including lenders, borrowers, & investors. Complex decisions resolved. Requires Excel.™ Best buy at $45.
GenMicronics, 5900 Shore Blvd. #401, St. Petersburg, FL 33707, 813/345-5020

Profit Stalker II

Are you a Macintosh investor? Then you need to track the market. Here's what others say about this program. "Well worth the wait . . . I would not delay purchasing this program." "Nothing less than awesome." "I love it!" A myriad of technical tools as easy to use as your Macintosh. $250 + $3 postage. CA residents add 6% tax. Call or write for free information.
Button-down Software, P.O. Box 19493, San Diego, CA 92119, 619/463-7474

○ *Fonts*

Downloadable Laser Fonts

Specialized fonts for the LaserWriter. Classical Greek $85. Serif/sans serif for scientific texts $75. Font of 100 chemical structures $125 (with scientific text fonts $160). Polish serif or sans serif $85 each (4 styles). Serif small caps $40. Regular or Polish (4 styles). Soon: modern Greek. MC/Visa. As mentioned in July '86 issue.
Allotype Typographics, 1600 Packard Rd. #5, Ann Arbor, MI 48104, 313/663-1989

LaserPerfect™ Fonts

We want fine typography for the Mac. Our downloadable fonts were designed especially for LaserWriter/Linotronic printers & put others to shame: good fit, kerned letters, old-style numerals, thin/em space, MacSlab (square serif) & MacSans (sans serif), with ital, bold, bold ital $95. LaserHebrew $145. Next: Devangari, Bembo, OCR-A. Custom characters/fonts.
Neoscribe International, P.O. Box 633-MD, East Haven, CT 06512, 203/467-9880

FONTgenix & LASERgenix

FONTgenix:™ Four volumes of dot-matrix display fonts $29.50 each volume (all four $99.50). FOREIGN FONTS EDITION:™ 22 foreign-language fonts on disk, only $49.50. LASERgenix:™ Downloadable LaserPrinter fonts only $32.50 each (add $3 s/h, CA res. add 6%). Write for samples or order at:
Devonian International Software, P.O. Box 2351, Montclair, CA 91763, 714/621-0973

○ *Genealogy*

MacGene™

Ideal for beginners and advanced users, the program was designed specifically for the Macintosh. One menu bar gives you complete control over data entry, search, select, list, and chart. Displays include Descendant, Pedigree, Family Group, Birthday, Surname. Supports user-defined fields, tailored reporting, linked files, etc. Exchange data w/ genealogist across town or across the world. Compatible w/ *MacWrite, Microsoft File,* etc. $145.
Applied Ideas, Inc., P.O. Box 3225, Manhattan Beach, CA 90266, 213/546-6461

○ *Graphics*

MAC-ART LIBRARY

Illustrate your ideas w/ *MAC-ART LIBRARY!* 12 disks of pro *MacPaint* images:
- Animals
- Farm Life
- Geography
- Kitchen
- Sports
- Tools
- Buildings
- Flowers/Trees/Plants
- Greeting Cards
- People
- Transportation
- Signs/Symbols/Borders

Sgl. disks $39.95. Full library $250. Sampler $49.95. $3 s/h. Other disks.
CompuCRAFT, P.O. Box 3155, Englewood, CO 80155, 303/850-7472

Magic Slate—Version 2.0

A dynamic graphics program that brings to the Mac environment an exciting art medium stimulating untapped artistic talent. Slate provides features typically found in expensive systems. Since you have a state-of-the-art computer, it makes sense to support it with similar software that opens the door to a fulfilling new personal experience.
Devionics, P.O. Box 2126, Covina, CA 91722, 714/779-7193

MGMStation

by Micro CAD/CAM, Inc., is a high-powered, easy-to-use CAD program for the Mac, similar in performance to *AutoCAD* for the IBM PC. *MGMStation* boasts over 140 powerful functions, including XY coordinate, polar, or digital data input; 100× zoom; accuracy to 4 decimals; & much more! Demo disk &/or VCR tape available. $799.
CompServCo., 800 Freedom Ln., Slidell, LA 70458, 800/272-5533, 504/649-0484

MacPlot & MacCAD

MacPlot by Microspot is a powerful plotter driver that will plot any object-oriented graphics produced on the Mac in up to 30 colors/pens. Supports over 45 plotters. MacCAD is a series of 12 separate architectural & engineering template libraries for use with either *MacDraw* or *MacDraft* (specify which).
CompServCo., 800 Freedom Ln., Slidell, LA 70458, 800/272-5533, 504/649-0484

Image Measurements

Caliber™ is the high-powered program you need to accurately measure area, length, angle, form, center of gravity, etc. Fast entry with tablet or mouse. 20 data channels each with statistics and graphics windows. *Caliber*™ counts, rescales, sorts, and merges. Imports and exports graphics and data. $250 MC/Visa. Demo disk $10.
Caliber Systems, 60 Manor St., Hamden, CT 06517, 203/281-7621

MiniCAD 2D/3D

The only CAD system developed exclusively for the Mac. Works like a Mac CAD system should. Don't be satisfied by a PC port. Nine decimal-place precision, 40 color layers, symbol library, *MacDraw* & Clipboard compatibility, 8 line types, & lots more! Even if you never use 3-D, MiniCAD is still your best buy for the Mac. Satisfaction or your money back. $395. Demo avail.
Diehl Graphsoft Inc., 3246-K Normandy Woods Dr., Ellicott City, MD 21043, 301/461-9488

○ *Integrated*

WorksPlus™ Spell

If you use *Microsoft Works*, you'll love *WorksPlus*™ *Spell*. It's fully integrated with *Works* and it's blindingly fast. It checks spelling at over a page a second using a 70,000-word modifiable dictionary. Includes automatic hyphenation and a glossary feature. $59.95 plus $3 s/h.
Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604, 800/233-6851, 800/922-PLUS (CA)

○ *Languages*

Pascal Extender/C Extender

Elegant & powerful set of compiled library routines provides fast, flexible, modifiable Mac interface–windows, menus, dialogs, scrolling, *plus* printing, graphics handling, text editing, & more. 200-p. manual, demos. Versions for Aztec C, LightspeedC, Consulair C, MacPascal, Lightspeed Pascal, TML Pascal, $129.95.
Inventions Software Corp., P.O. Box 3168, Ann Arbor, MI 48106, 313/996-8108

Multitasking for the Mac

MACH2, a multitasking FORTH83 development system, in THE language for interactive Mac programming: COMPLETE toolbox access, integrated assembler (MDS-format)/debugger/disassembler/text editor, FAST execution, creates stand-alone applications, 500-pg. manual. Booth #940 at the Expo. $99.95 (+CA tax) Visa/MC.
The Palo Alto Shipping Co., P.O. Box 7430, Menlo Park, CA 94026, 415/854-7994

Lisp Development System

MacScheme+Toolsmith™ lets you program the Mac interactively in Lisp: Complete access to Toolbox traps, multitasking, high-level window & menu managers, interrupt-driven event handlers (no more polling!). Includes *MacScheme*™ Lisp system. 1M RAM recommended. Introductory price $250.
Semantic Microsystems, 4470 S.W. Hall St. #340, Beaverton, OR 97005, 503/643-4539

Solve your Lisp Problem!

ExperCommonLisp™ for development: the first & only double-clickable, object-oriented, toolbox-compatible, "CommonLisp." Le-Lisp™ for portability: Interpreted, compiled, a truly portable Lisp that runs on the Mac, IBM PC, DEC, VAX, SUN, and Apollo. ExperLisp™ for education: easy to learn, fun to use, Lisp compiler w/3-D graphics. University site licenses avail.
ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871

ExperPrologII™

We call it the "Real Thing." It's the original implementation of the Prolog II developed by Alain Colmerauer, inventor of the Prolog language. Execute, trace, & interactively modify Prolog II programs. The only Prolog with the powerful control of DIF & FREEZE. Other features incl. the ability to manipulate fact & rule unification process.
ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871

○ *Mathematics*

PowerMath

Solves problems from simple algebra to complicated calculus expressions. You can differentiate, integrate, plot polynomial expressions, manipulate matrices, solve simultaneous equations, and create custom functions. If you are a student, engineer, or work with math, you'll love the easy-to-use versatility. Retail $100.
Industrial Computations, Inc., 40 Washington St., Wellesley, MA 02181, 617/235-5080

○ *Medical*

Medical & Dental Mgmt.

Solo or multipractitioner office includes patient (responsible party) billing, recall, paper/electronic claims, aging, collections, SuperBill, labels, diagnostic history, *Word/MacWrite*, audit & productivity reports. 24-hr. support. 512K+ hard disk or XL. *Mac Office*. Demo from $100. AMEX/Visa/MC. 2,400+ dealers.
CMA Micro Computer, 55888 Yucca Trail, P.O. Box 2080, Yucca Valley, CA 92286-2080, 619/365-9718

○ *Payroll*

Time Saver Payroll™

START THE NEW YEAR with This Complete Payroll System
• *Calculates* • *Accumulates* • *Prints reports* • Salaried, hourly, & comm. wages • 10 deductions, incl. fed. & state taxes • Tax tables easily edited by user • Monthly & quarterly reports, incl. 941, FUTA/940 • Prints checks and W-2 forms • *Easy to use!* Req. *Excel* $45. MC/Visa/Chk. Demo $10.
Western Software Associates, 110 El Dorado Rd., Walnut Creek, CA 94595, 415/935-3673

○ *Plotter Drivers*

Plot-It

Plots *MacDraw, MacDraft, MacProject, MacPaint*, etc. on popular Apple, Hewlett-Packard, or Houston Instrument pen plotters in sizes A, B, C, D, & E. Use for accurate engineering & architectural drawings or color data plots. Flexible color interface & scaling. $125. See review in Sept. '86 *Macworld*.
Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998

○ *Printer Drivers*

The Print-Link™

A printer driver program, complete w/ cable, allowing choice of dot matrix, daisy wheel, & ink jet printers for the Mac. Mfg.'s supported are Apple, Brother, C. Itoh, Citizen, Comrex, Diablo, Dynex, Epson, Infoscribe, Juki, Okidata, Panasonic, Qume, Siemens, & more. $84.95.
GDT Softworks Inc., P.O. Box 1865, Point Roberts, WA 98281-1865, 604/291-9121 or *800/663-MACC (6222)*

Mac Palette

By Microspot, prints pictures & text in color from within most Mac software, using the ImageWriter II. It may be accessed using the Choose Printer & Print commands. It supports *MacDraw, MacDraft, MacWrite, Word, Excel, PageMaker, Jazz, Chart, MacProject* (not bitmapped graphics, e.g., *MacPaint*). $69.
CompServCo., 800 Freedom Ln., Slidell, LA 70458, 800/272-5533, 504/649-0484

○ *Public Domain*

Mac Public Domain

Mac Public Domain Software–Thousands available, $10 per disk. Choose from applications, *Multiplan/Excel* templates, games, art, utilities, backup programs, disk editors, music, templates for business, desk accessories. Carefully organized with documentation. Send for a catalog.
Educomp, 2431 Oxford Ave., Cardiff, CA 92007, 619/942-3838

2000+Programs • Tips • News

No club has more programs or a better newsletter. Members in 31 countries. One-time $20 subscription gets you our intro. disk w/10 terrific programs + a description of our HUGE library of over 2000 programs, PLUS our quarterly newsletter filled w/tips and new programs. Members pay $9 for any disk (plus $1 s/h).
PD Mac, Dept. 11, P.O. Box 5626, Sherman Oaks, CA 91423

Public Domain Disks $5

Hundreds of public domain and shareware programs available for $5/disk ppd USA; no membership fees. Monthly newsletter reviews public-domain and commercial software and technical issues of interest to

Mac users: $14/yr. subscription. Send for free sample issue and disk catalog.
MacKey Mouse Club, P.O. Box 4561, Lincoln, NE 68504, 402/466-0252

PD Software Club
We have the best in proven updated PD software. We scour all the national and local sources for you. Our 50 disks contain only current versions of over 1000 items. $2 gets you our catalog & a $2 coupon. $20 annual membership fee gets you monthly newsletters and 2 FREE disks of fonts and DAs. Monthly disks $6.95, library disks $8.95. Visa/MC.
Translatum International, 1730 E. Oltorf St. #127, Austin, TX 78741, 512/442-0266

1000s of Titles!
We can provide you with the very best Macintosh fonts, DAs, games, utilities, original clip art, and more! Send $1 for catalog, or become a Mac Group member and receive our catalog, discount pricing, a free sampler disk, and newsletter subscription for only $15/year!
The Mac Group, P.O. Box 85152, MB231, San Diego, CA 92138

Public Domain $3/Disk
Over 160 of the BEST public domain programs and NEVER any membership fee or shipping hassles. Includes DAs, games, utilities, graphics, business, telecom, fonts, and much more. Send us $1.50 or a 400K formatted disk, and we'll send you a catalog and sample programs.
CHA Computer Services, P.O. Box 622, Lincoln, MA 01733, 617/891-1981

○ *Real Estate*

Property Management
Comprehensive program for managing residential and commercial properties. Many management reports including: operating statement, delinquent rent, lease expiration, and transaction register. Provides check writing, check reconciliation, posting late fees, recurring expenses–$395. Investment analysis–$245.
Yardi Systems, 3324 State St. Ste. O, Santa Barbara, CA 93105, 805/687-4245

Investment Analysis
From RealData, the leader in real estate software. Latest tax rules included in this powerful sensitivity analysis for income property. Ten-year pro forma of cash flows, financing, resale, tax consequences, IRR/FMRR, and more. Flexible and easy to use. Requires *Multiplan™*, *Jazz™*, or *Excel™*. $195.
RealData, Inc., 78 N. Main St., South Norwalk, CT 06854, 203/255-2732

The Appraiser's Office
State-of-the-art program developed by professional appraisers, just for the Mac. Completes the FNMA 1004 Residential Form quickly and accurately. Menu-driven; on-screen form; performs all calculations. Stores, searches, retrieves, and pastes comps to/from database. Office management function. FREE URAR upgrade. Requires *Excel*. $395.
RealData Inc., 78 N. Main St., South Norwalk, CT 06854, 203/255-2732

More Real Estate Tools . . .
From RealData, the leader in real estate software. Products for investors, commercial and residential developers, syndicators, mortgage lenders, brokers, and closing attorneys. Programs for the Macintosh and the IBM PC available for immediate delivery. AMEX, Visa, MasterCard welcome.
RealData, Inc., 78 N. Main St., South Norwalk, CT 06854, 203/255-2732

ProAnalysis
A comprehensive real estate analysis program written specifically to incorporate the Macintosh's easy-to-use features. Facilitates property selection, refinancing decisions, & tax planning. Full modeling capabilities, sensitivity analysis, IRR, help features, clear format. $295. Brochure available.
Technalysis Services, 14555 DeBell Rd., Los Altos Hills, CA 94022, 415/949-4176

Loan Amortization
AmPack is a straightforward loan amortizations software package designed by a CPA & tax attorney. *AmPack* supports variable rates, graduated, skipped, & principal-only payments. Also includes balloons, negative amortizations, customized schedules, loan analysis, & more. $49.50. Visa/MC. Add $5 s.h.
Softflair, Inc., 2100 W. 53rd St., Minneapolis, MN 55419, 612/924-3404

○ *Scientific*

Tools for Scientists
Two low-priced products that enhance the usefulness of your Mac. Our *Scientific Symbols Fonts* disk contains all the characters in IBM's Selectric™ symbols ball and more for $40. The *Spectral Analysis* package provides four basic functions: forward and inverse transform, power spectrum, and autocorrelation for $75.
Renaissance Software Systems, P.O. Box 27276, Austin, TX 78755-1276

○ *Security*

Advanced Copy Protection
The leading software manufacturers depend on Softguard copy protection. Introducing our *Protection Kit*, a complete copy protection system that runs on the Macintosh.
- Stops all copybusters
- FULL HARD DISK support
- No source code changes
- Compatible with all Macintosh systems.

Free demo disk.
Softguard Systems, Inc., 2840 San Tomas Expwy. #201, Santa Clara, CA 95051, 408/970-9240

○ *Spelling Checkers*

MacGAS™
The top-rated spell-checker w/ glossary & thesaurus.
- Works on-line w/ *MacWrite, Word, Jazz*, and others.
- 30,000- & 80,000-word dictionaries
- Automatically replaces misspelled words, preserving fonts & antonyms

"This is easily the best thesaurus we have seen yet."–Oct. *MacUser*. "MacGAS is fast, straightforward, & easy to use . . . outstanding glossary."–July *Macworld*.
EnterSet, 410 Townsend, San Francisco, CA 94107, 415/543-7644 or 800/621-0351 ext. 305

○ *Statistics*

STATFAST
Professional but easy-to-use, SUPERFAST statistical package. Unlimited size of data files. Incl. two flexible data editors (can access *Multiplan* & other files), descriptive stats, t-tests, correlations, cross-tabulation, nonparametric stats, general multifactor ANOVA/ANCOVA, multiple regression, charts, plots, and more. $119. Req. 128K, 1dd.
Statsoft, 2832 E. Tenth St. #4, Tulsa, OK 74104, 918/583-4149

CLR ANOVA
Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal *n*. Marginal means, plots of interactions, simple effects, range tests, contrasts, and more. Full Mac interface. Two data editors provided. Can read text files w/entries separated by spaces, commas, or tabs. $75 + $3 s/h.
Clear Lake Research, 5615 Morningside #127, Houston, TX 77005, 800/835-2246 ext. 199, 800/362-2421 ext. 199 in Kansas

○ *Stock Market*

Portfolio/Market Link
- *Stock Portfolio System*, a complete portfolio manager, incl. 9 reports, tie to Dow Jones or manual update. Handles diversified investments.
- *Market Link*, auto fetch up to 120 quotes up to 8 times in unattended mode. Tie to DJ or Source. Bridge quotes to *Excel*.

Free brochure + 100% rebate offer.
Smith Micro Software, Inc., P.O. Box 7137, Huntington Beach, CA 92615, 714/964-0412

○ *Utilities*

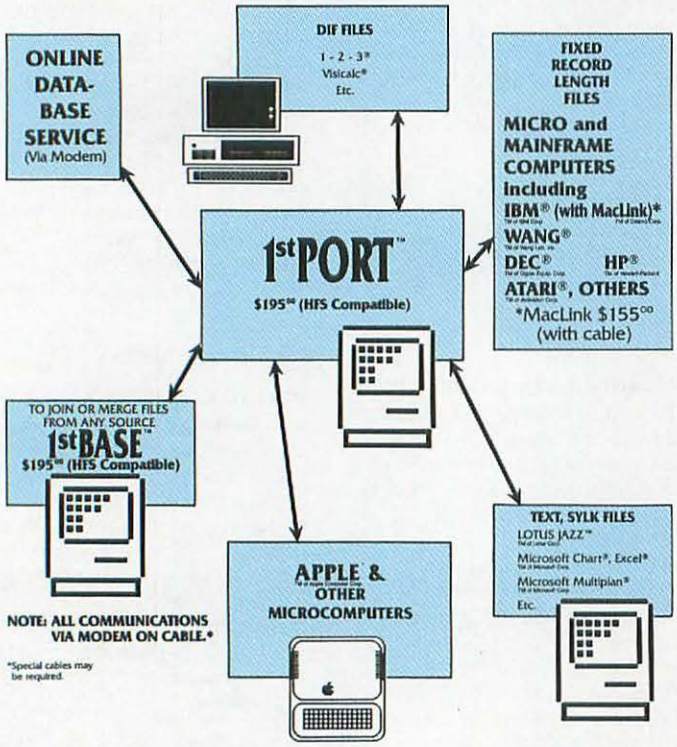
Copy II Mac
Backs up nearly all protected software quickly, easily! Includes Copy II Hard Disk, which copies many protected programs direct to your hard disk so you can run them without a key disk. Great disk utilities (Mac Tools) also included. For Mac/Mac Plus, 1 or 2 drives. All 3 for $39.95 + $3 s/h. Visa/MC/Chk.
Central Point Software, Inc., 9700 S.W. Capitol Hwy. #100, Portland, OR 97219, 503/244-5782

Time-Saving Programs
- QUED™ editor w/ everything you ever wanted & more $65.
- DiskOrder™ diskfile mgmt., cataloging, & labeling $50.
- ElectroFonts™ electronics analog/digital symbols $99.
- SciFonts™ math symbols, Greek alphabet, fractions $49.95.
- MacTAG™ teacher's gradebook $49.
- MacQwerty™ Dvorak custom keyboard reconfiguration $35.

Paragon Courseware, 4954, Sun Valley Rd., Del Mar, CA 92014, 619/481-1477

1stPORT™/MacLink®
Multi-Purpose Data TransPort System
for the Apple Macintosh
1stPORT

Communication & File Conversion, Reformatting, Matching
Now you can move, match, or join your data as easy as "MacPie©"



Template Systems, Inc. 1-800-522-2286
7 Industrial Park Medway, Mass. 02053 (617)533-2203(Ma.)

Circle 522 on reader service card

EZTax-PREP™ '87

The fast, easy, accurate tax preparer for use on your Macintosh® with Multiplan® or Excel®. You'll wonder how you managed without it.

It doesn't matter if tax preparation is your business or you prepare your own tax returns—EZTax-PREP '87 with AUDIT ALERT™ will save you time and money, while reducing the possibility of errors. It's the ideal micro tool for accountants, small CPA firms, and individuals.

EZTax-PREP '87 has every feature you want: Fully documented and supported / 23 IRS schedules and forms—1040, A, B, C, D, E, F, G, R, SE, W, 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4684, 4797, 5695, 6251, 6252 / Enter data once—the system applies it to all forms and schedules / Automatic computation of income averaging, depreciation, alternative minimum tax / Easy recall of any form or location for changes / Prints IRS-approved, signature-ready returns / "What if" planning / Proven track record with thousands of users nationwide / Linked NY and CA supplements available.

To order EZTax-PREP '87: EZTax-PREP '87 costs $129.95 (or $99.95 for Macintosh users). Add $3.00 shipping and handling, and 6% sales tax in PA. Just call **1-800-543-1040 (in PA 215-667-4064)** to order with VISA, MasterCard or American Express, or include a check with your letter. **Please specify computer and spreadsheet you use.**

Ask for information about ***EZTax-PLAN*** for individual or business tax planning. It keeps you abreast of current and proposed tax laws so that you pay only the lowest legal tax.

EZ WARE

EZWare Corporation
Dept. M
29 Bala Avenue
Bala Cynwyd, PA 19004

800-543-1040
(in PA 215-667-4064)

Circle 168 on reader service card

Advertiser Index

Reader Service Number		Reader Service Number	
610	ALP Systems, Inc., 197	395	Mac Doctor Electronics, 33
501	AST Research, 151	—	MacConnection, 82, 84-87
622	Abaton Technology Corp., 174	337	MacMemory, 40-41
552	Adobe Systems, 181	368	MacRentals, 207
525	Advanced Logic Systems, 39	16	MacStore, 230
317	Aegis Development, 231	—	Macworld Expo, 162-163
274	Affinity Microsystems, 76	2	Manhattan Graphics, 51
557	Alsoft, 225	595	Mansfield Systems, 184
227	Altsys, 180	563	Meku, 225
204	Ann Arbor Softworks, 164	596	Meta Software, 58
581	Avalon Hill Game Co., The, 20	235	Micrographic Images, 190
380	Batteries Included, 201	—	Microsoft, 70-71, 167, 169, 171
373	Best Computer Supplies, 42	518	Mindwork Software, 28-29
578	Bible Research Systems, 24	406	Mirror Technologies, 18-19
474	Blowhard Industries, 170	583	N² Products, 198
706	Blyth, 16A-16H	353	N² Products, 231
705	Blyth, 16A-16H	284	New Canaan Microcode, 206
707	Blyth, 16A-16H	13	Odesta, 80
708	Blyth, 16A-16H	575	Orange Micro, 48
704	Blyth, 16A-16H	547	Owl Int'l., 34
703	Blyth, 16A-16H	—	PC Connection, 82, 84-87
381	Borland Int'l., IFC-1	45	PC Network, 52-53
588	Bravo Technologies, 226	387	Palantir Software, 222
623	Cahner's Exposition, 213	450	Panamax, 225
—	Casady, 54	609	Peak Systems, 205
175	Central Point Software, 24	509	Peripheral Land, 59
607	Central Point Software, 25	—	Peripherals Computers & Supplies, 204
524	Centram, 60-61	560	Personal Training Systems, 212
571	Century Software, 178	211	Practical Computer Applications, 30
619	Cognition Technology, 155	77	ProVUE Development Corp., 6
496	CompuCover, 206	194	Programs Plus, 208-209
330	CompuServe, 26-27	702	Rabbit Industries, 189
620	Computer Cover Co., 210	577	Radius, Inc., 15
271	Computer Friends, 38	614	Relax Technology, 229
611	Coral Software, 68	621	Roc Software, 186
384	Cricket Software, 62-63	—	Satori Software, 144
584	DCC Systems, 192	266	Silicon Beach Software, 8
—	Data Tailor, 166	555	Silicon Express, 179
281	DataViz, Inc., 196	438	SmethersBarnes, 10-11
612	DataWiz, 206	334	SoftCore, 168
615	Dest Corp., 56-57	—	SoftStyle, 43
562	Diskette Connection, 230	456	Softview, 156
498	Dove Computer Corp., 159	435	Software Discoveries, 229
355	Dow Jones Software, 177	—	Software Library, 228
600	E-Machines, 74	255	Sony, 78
168	EZ Ware, 220	367	Springboard Software, 72
193	Echo Data Service, 224	618	Sun Remarketing, 200
602	Ehman Engineering, 191	—	SuperMac Technology, 147
403	Enabling Technologies, 160	491	Systat, 16
56	ExperTelligence, 148	332	T/Maker Co., 194
579	1st Aid Software, 58	461	Tangent Technologies, 31
572	G.A.S. Int'l., 193	478	Target Software, 21, 143
603	GDT Softworks, 228	522	Template Systems, 220
—	GE Information Services, 69	96	Think Technologies, 7
323	GTCO Corp., 182	—	Thunderware, 202
143	General Computer, 44-45	483	Tussey Computer Products, 211
520	Greene, Johnson, 54	134	USA-Flex, 176
613	High Performance Systems, 183	537	Uptime, 5
308	I.D.D., 152	591	Value Line Software, 187
530	I/O Design, 30	459	Vision Technologies, 178
624	Icom Simulation, 221	439	Warp Nine Engineering, 36-37
272	Icon Review, 64-67	538	White Pine Software, 160
249	Infosphere, IBC	374	Williams & Macias Microcomputer Products, 50
589	Internet, 46		
570	Jasmine Computer Systems, 49		
599	Kamerman Labs, 9		
—	Kensington, 199, BC		
568	Letraset, 137-140		
493	Levco, 172		
238	Lionheart, 206		
50	Living Videotext, 12		
—	Lotus, 22-23		
601	Lundeen & Assoc., 161		

MACWORLD

The Macintosh™ Magazine

Free Product Information Service

Get more information about the products you are interested in. There's no cost. And no obligation.

1. Your primary job function:
a. Corporate or general manager
b. Department manager
c. MIS manager
d. Professional
e. Other _____

2. Number of employees in your company:
1. 25 or fewer
2. 26-99
3. 100-499
4. 500-999
5. 1000 or more

3. How soon do you plan to buy?
a. Now
b. In 4-6 months
c. In 7-12 months
d. Beyond 12 months
e. Reference only

4. For how many personal computers do you buy products? (Include both company and personal units, please.)
1. 1
2. 2-4
3. 5-9
4. 10 or more

5. How many of the above are Macintoshes?
a. 1
b. 2-4
c. 5-9
d. 10 or more

For advertisers with reader service numbers 1–700, complete this card (with numbers 703–708, complete the bottom card) as follows:

- Print or type your name and address and circle the appropriate answer to each question.
- Circle the numbers that correspond to the reader service numbers for the products that interest you. These numbers appear in the ads and in the Advertiser Index.
- Apply first-class postage before mailing.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156
157	158	159	160	161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192
193	194	195	196	197	198	199	200	201	202	203	204
205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228
229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264
265	266	267	268	269	270	271	272	273	274	275	276
277	278	279	280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312
313	314	315	316	317	318	319	320	321	322	323	324
325	326	327	328	329	330	331	332	333	334	335	336
337	338	339	340	341	342	343	344	345	346	347	348
349	350	351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370	371	372
373	374	375	376	377	378	379	380	381	382	383	384
385	386	387	388	389	390	391	392	393	394	395	396
397	398	399	400	401	402	403	404	405	406	407	408
409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432
433	434	435	436	437	438	439	440	441	442	443	444
445	446	447	448	449	450	451	452	453	454	455	456
457	458	459	460	461	462	463	464	465	466	467	468
469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492
493	494	495	496	497	498	499	500	501	502	503	504
505	506	507	508	509	510	511	512	513	514	515	516
517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552
553	554	555	556	557	558	559	560	561	562	563	564
565	566	567	568	569	570	571	572	573	574	575	576
577	578	579	580	581	582	583	584	585	586	587	588
589	590	591	592	593	594	595	596	597	598	599	600

Please print or type all information

Name

Company

Address

City, State, Zip (Zip code required to ensure delivery)

Phone: Area Code/Number

601	602	603	604	605	606	607	608	609	610	611	612
613	614	615	616	617	618	619	620	621	622	623	624
625	626	627	628	629	630	631	632	633	634	635	636
637	638	639	640	641	642	643	644	645	646	647	648
649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672
673	674	675	676	677	678	679	680	681	682	683	684
685	686	687	688	689	690	691	692	693	694	695	696
697	698	699	700	701	702	709	710	711	712	713	714
715	716	717	718	719	720	721	722	723	724	725	726
727	728	729	730	731	732	733	734	735	736	737	738
739	740	741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760	761	762
763	764	765	766	767	768	769	770	771	772	773	774
775	776	777	778	779	780	781	782	783	784	785	786
787	788	789	790	791	792	793	794	795	796	797	798
799	800	999									

PLEASE NOTE: This card is for your convenience in obtaining information on products advertised in *Macworld*. Please send editorial comments or inquiries to The Editor, *Macworld*, 501 Second St. #600, San Francisco, CA 94107.

4BAX6

Circle number 999 to subscribe to *Macworld*. We will bill you $24 for a one-year (12-issue) subscription (U.S. only).

Valid through 4/17/87 **W Jan. 1987**

BLYTH
SOFTWARE, INC.

FREE
Product Information Service From Companies Appearing in the Blyth Software, Inc. Advertising Insert

MACWORLD

Return this card today. There's no cost. And no obligation.

It's easy to get more information about the products listed in the Blyth advertisement. Here's how:

- Print or type your name and address and circle the appropriate answer to each question.
- Circle the numbers that correspond to the reader service numbers for the products that interest you. These numbers appear in the ad as well as the Advertiser Index.
- Apply first-class postage before mailing.

Please print or type all information

Name

Company

Address

City, State, Zip (Zip code required to ensure delivery)

Phone: Area Code/Number

703 704 705 706 707 708 999

1. Your primary job function:
a. Corporate of general manager
b. Department manager
c. MIS manager
d. Professional
e. Other _____

2. Number of employees in your company:
1. 25 or fewer
2. 26–99
3. 100–499
4. 500–999
5. 1000 or more

3. How soon do you plan to buy?
a. Now
b. In 4–6 months
c. In 7–12 months
d. Beyond 12 months
e. Reference only

4. For how many personal computers do you buy products? (Include both company and personal units, please.)
1. 1
2. 2–4
3. 5–9
4. 10 or more

5. How many of the above are Macintoshes?
a. 1
b. 2–4
c. 5–9
d. 10 or more

PLEASE NOTE: This card is for your convenience in obtaining information on products advertised in *Macworld*. Please send editorial comments or inquiries to The Editor, *Macworld*, 501 Second St. #600, San Francisco, CA 94107.

4BAX6

Circle number 999 to subscribe to *Macworld*. We will bill you $24 for a one-year (12-issue) subscription (U.S. only).

Valid through 4/17/87 **W Jan. 1987**

PLACE
FIRST-CLASS
POSTAGE HERE.
(POST OFFICE
WILL NOT DELIVER
WITHOUT STAMP)

MACWORLD

Product Information Service
P.O. Box 92844
Rochester, NY 14692

PLACE
FIRST-CLASS
POSTAGE HERE.
(POST OFFICE
WILL NOT DELIVER
WITHOUT STAMP)

MACWORLD

Product Information Service
P.O. Box 92844
Rochester, NY 14692

Product Index

Reader Service Number

Software

Business

274 Affinity Microsystems, 76
381 Borland Int'l., IFC-1
588 Bravo Technologies, 226
619 Cognition Technology, 155
384 Cricket Software, 62-63
000 Data Tailor, 166
355 Dow Jones Software, 177
613 High Performance Systems, 183
249 Infosphere, IBC
589 Internet, 46
568 Letraset, 137-140
238 Lionheart, 206
50 Living Videotext, 12
— Lotus, 22-23
595 Mansfield Systems, 184
— Microsoft, 70-71
518 MindWork Software, 28-29
547 Owl Int'l., 34
387 Palantir Software, 222
560 Personal Training Systems, 212
621 Roc Software, 186
— Satori Software, 144
456 Softview, 156
435 Software Discoveries, 229
491 Systat, 16
522 Template Systems, 220
591 Value Line Software, 187

Vertical

610 ALP Systems, Inc., 197
578 Bible Research Systems, 24
— Satori Software, 144

Data Management

381 Borland Int'l., IFC-1
— Data Tailor, 166
— Lotus, 22-23
13 Odesta, 80
77 ProVUE Development Corp., 6
435 Software Discoveries, 229

Word Processing

525 Advanced Logic Systems, 39
520 Greene, Johnson, 54
601 Lundeen & Assoc., 161
518 MindWork Software, 28-29
332 T/Maker Co., 194
478 Target Software, 143

Communications

524 Centram, 60-61
281 DataViz, Inc., 196
249 Infosphere, IBC
589 Internet, 46
387 Palantir Software, 222
— Peripherals Computers & Supplies, 204
334 SoftCore, 168
461 Tangent Technologies, 31
522 Template Systems, 220

Educational

578 Bible Research Systems, 24
387 Palantir Software, 222
560 Personal Training Systems, 212
367 Springboard Software, 72

Entertainment

317 Aegis Development, 231
581 Avalon Hill Game Co., The, 20
211 Practical Computer Applications, 30

Graphics/Desktop Publishing

552 Adobe Systems, 181
227 Altys Corp., 180
204 Ann Arbor Softworks, 164
— Casady Co., 54
571 Century Software, 178

Reader Service Number

384 Cricket Software, 62-63
308 I.D.D., 152
568 Letraset, 137-140
50 Living Videotext, 12
2 Manhattan Graphics, 51
595 Mansfield Systems, 184
575 Orange Micro, 48
547 Owl Int'l., 34
266 Silicon Beach Software, 8
334 SoftCore, 168

Personal Business/Home

380 Batteries Included, 201
381 Borland Int'l., IFC-1
518 MindWork Software, 28-29
547 Owl Int'l., 34

Languages/Development Systems

619 Cognition Technology, 155
611 Coral Software, 68
56 ExperTelligence, 148
— Microsoft, 167, 169, 171
438 SmethersBarnes, 10-11
96 Think Technologies, 7

Utilities

557 Alsoft, 225
175 Central Point Software, 24
579 1st Aid Software, 58
621 Roc Software, 186
478 Target Software, 21

Miscellaneous

330 CompuServe, 26-27
168 EZ Ware, 220
403 Enabling Technologies, 160
603 GDT Softworks, 228
— GE Information Services, 69
624 Icom Simulation, 221
589 Internet, 46
596 Meta Software Corp., 58
284 New Canaan Microcode, 206
560 Personal Training Systems, 212
— Satori Software, 144
334 SoftCore, 168
— SoftStyle, 43
537 Uptime, 5

Hardware

Digitizers/Scanners

622 Abaton Technology Corp., 174
615 Dest Corp., 56-57
572 G.A.S. Int'l., 193
— Thunderware, 202

Display

600 E-Machines, 74
235 Micrographic Images, 190
583 N² Products, 198
577 Radius, Inc., 15

Modems

271 Computer Friends, 38

Hard Disks/Storage

501 AST Research, 151
584 DCC Systems, 192
602 Ehman Engineering, 191
143 General Computer, 44-45
570 Jasmine Computer Systems, 49
493 Levco, 172
406 Mirror Technologies, 18-19
609 Peak Systems, 205
509 Peripheral Land, 59
702 Rabbit Industries, 189
614 Relax Technology, 229
— SuperMac Technology, 147
439 Warp Nine Engineering, 36-37

Miscellaneous

474 Blowhard Industries, 170
607 Central Point Software, 25
271 Computer Friends, 38
498 Dove Computer Corp., 159
603 GDT Softworks, 228

Reader Service Number

323 GTCO Corp., 182
599 Kamerman Labs, 9
— Kensington, 199, BC
395 Mac Doctor Electronics, 33
337 MacMemory, 40-41
583 N² Products, 198
353 N² Products, 231
450 Panamax, 225
509 Peripheral Land, 59
618 Sun Remarketing, 200

Accessories

Floppy Disks/Holders

562 Diskette Connection, 230
193 Echo Data Service, 224
255 Sony, 78

Miscellaneous

373 Best Computer Supplies, 42
623 Cahner's Exposition, 213
496 CompuCover, 206
620 Computer Cover Co., 210
271 Computer Friends, 38
612 DataWiz, 206
530 I/O Design, 30
— Kensington, 199, BC
— Macworld Expo, 162-163

Reader Service Number

563 Meku, 225
353 N² Products, 231
450 Panamax, 225
134 USA-Flex, 176

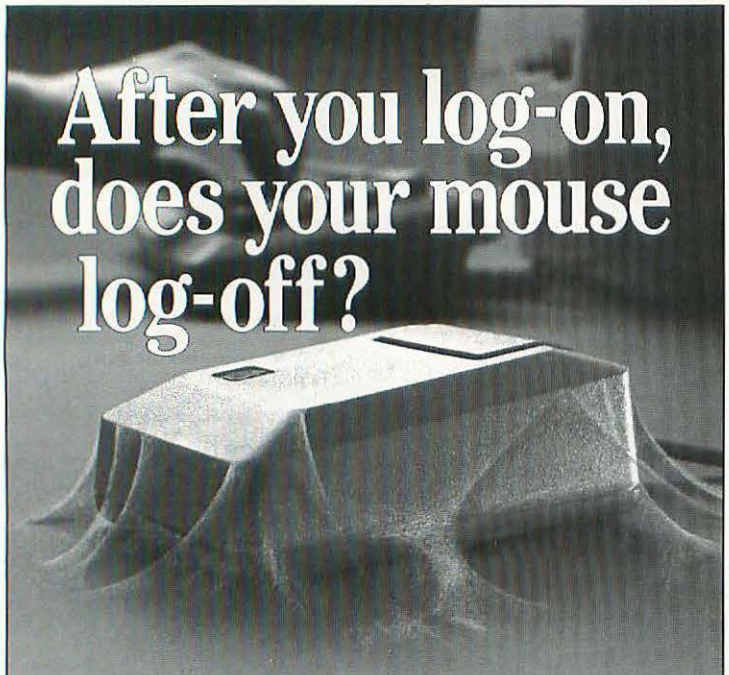
Mail Order

373 Best Computer Supplies, 42
272 Icon Review, 64-67
— MacConnection, 82, 84-87
368 MacRentals, 207
16 MacStore, 230
— PC Connection, 82, 84-87
45 PC Network, 52-53
194 Programs Plus, 208-209
555 Silicon Express, 179
— Software Library, 228
483 Tussey Computer Products, 211
134 USA-Flex, 176
459 Vision Technologies, 178



Circle 624 on reader service card

After you log-on, does your mouse log-off?



Probably. Because until recently, telecommunications and mice simply didn't mix. Because mainframes don't know or care about such things as icons and pointing and clicking.

With inTalk, a remarkable communications program from Palantir, mainframe software can be made Mac-like. Built into every copy is a robust programming language named CCL. In addition to its capacity to perform unattended file transfers and the like, you can use CCL to "hide the host," our term for applying the Macintosh user interface to text-based software. For example, the DIALOG statement defines and displays a dialog box. When one of its buttons is clicked, appropriate characters are sent to the host. By testing the characters that come back, you can display another dialog, output text to the printer, send or receive a file, reprogram the function keys–you decide.

With a little effort, your CCL scripts can produce spectacular results. Imagine controlling mainframe accounting software with points and clicks, or traversing the elephantine CompuServe command tree without touching the keyboard.

If you compare, you'll find that inTalk is the most powerful Macintosh communications software money can buy, with more file transfer protocols, more terminal emulations, more function keys, more features, period, than any other Mac com program. No wonder Apple recommends inTalk in its Connectivity Guide as the program of choice for interfacing with mini and mainframe computers.



PALANTIR®
SOFTWARE

Hide the Host™ with inTalk* communications software. $145. For more information, call or write Palantir Software, 12777 Jones Road, Suite 100, Houston, Texas 77070. (800) 368-3797. In Texas, (800) 831-3119. In Canada, (800) 235-0025. Telex 790510.

*Formerly called inTouch

TEACHING MADE EASY

Palantir Educational Series

Looking for programs that are educational and at the same time hold your interest? The Palantir Educational Series will challenge you, stimulate you, and keep you coming back to the program again and again.

MacType® is a touch typing instructor which teaches the standard QWERTY or Dvorak keyboard. MacType is a serious typing program that can be used in a classroom to track over 100 student's progress. Speed and Accuracy statistics are displayed on screen. A special utility allows you to use the Dvorak keyboard with other Mac programs.

MathFlash™ teaches addition, multiplication, division, and subtraction skills to elementary age students using the time-tested flash card method. You may select from various levels of speed and difficulty. A report card may be printed at any time to chart your progress.

WordPlay challenges you with Crossword and Diagramless puzzles. Included are over fifty puzzles of varying difficulty. You can also use Wordplay to create your own puzzles, a feature ideal for teachers. Puzzles may be printed at any time so you can work on them anywhere.

For more information
call Palantir Software
(800) 368-3797

PALANTIR®
SOFTWARE

YOUR BUSINESS PARTNERS

Palantir Financial Series

You want an easy and efficient way to keep track of your small business accounting information with your Mac. The Palantir Financial Series is your answer.

General Ledger provides you with a chart of accounts that can be altered to suit your special needs. This double entry system gives you reports which include Trial Balance, Batch Transaction Listing, Summary of Net Worth and five different Profit and Loss Statements.

Accounts Receivable gives you a clear picture of your customer accounts using either the Balance Forward or the Open Item method, or both. Statements can be generated on variable schedules. Available reports include Aged Balances List and a Customer Sales Report.

Inventory Control keeps track of your stock, giving you the total quantity and net cost of all product sales. Purchase Order Reports and Product Status Lists are among the many reports that can be generated.

For more information
call Palantir Software
(800) 368-3797

PALANTIR®
SOFTWARE

Circle 387 on reader service card

Where to Buy

This section contains information about products featured editorially in this issue. Programs are *not* copy protected unless otherwise indicated. All prices are list prices. An asterisk indicates that a product review appears in this issue.

Public domain software is available through on-line information services, through user groups such as Berkeley Macintosh Users Group (415/849-2684) or the Boston Computer Society's Mac SIG (617/367-8080), or through mail-order clearinghouses such as Educomp, 2429 Oxford St., Cardiff by the Sea, CA 92007, 619/942-3838, or SoftCore (formerly the Public Domain Exchange), 673 Hermitage Ln., San Jose, CA 95134, 408/942-0309.

3Server3
3Com, 1365 Shorebird Way, Mountain View, CA 94043, 415/960-9451, 800/NET-3COM. Requires 128K ROM and SCSI interface and AppleTalk. For four or more Macs. $5995, 3Server3 Tape Backup $1995.*

30 XT, 60 XT
Micah, 2330 Marinship Way #111, Sausalito, CA 94965, 415/331-6422, 800/523-9394. Requires 128K ROM and SCSI interface. 30 XT $1395, 60 XT $4495.

AMS General Ledger
Version 2.07. CheckMark Software, Inc., P.O. Box 860, Fort Collins, CO 80522, 303/484-3541, 800/426-2466 ext. 338 (orders only). 128K minimum memory; two drives recommended. $195.*

Anatool
Abvent, 9903 Santa Monica Blvd. #268, Beverly Hills, CA 90212, 213/659-5157. Key-disk copy protection. 512K minimum memory; Mac Plus and hard disk recommended. $795.*

AppleTalk
Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory. $75.

AST-2000, AST-4000
AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714, 714/553-0340. Requires 128K ROM and SCSI interface; HFS only. AST-2000 $2795, AST-4000 $6995.

Bernoulli Box 10, 10+10, 20, 20+20
Iomega, 1821 W. 4000 South, Roy, UT 84067, 801/778-1000, 800/446-6342, 800/778-3000. Requires 128K ROM and SCSI interface; HFS only. 10MB $1795, 10+10 $2695, 20 $2395, 20+20 $3495.

Big Mack Twin Pack
Western Computer, 17781 Mitchell, Irvine, CA 92714, 714/553-1611. Requires 128K ROM and SCSI interface; HFS only. $1995, Big Mack Twin Pack Plus 40/40 combination $2995.

The Big Picture
E-Machines, Inc., 7945 S.W. Mohawk St., Tualatin, OR 97062, 503/692-6656. Key-disk copy protection. 512K minimum memory. $1995.

CheapPaint
Available as part of Macromind Utility Disk (MUD), Spinnaker/Hayden Software, One Kendall Square, Cambridge, MA 02139, 617/494-1200. 128K minimum memory; MFS only. $49.95.

CheckMark Payroll
Version 2.02. CheckMark Software, Inc., P.O. Box 860, Fort Collins, CO 80522, 303/484-3541, 800/426-2466 ext. 338 (orders only). 128K minimum memory; two drives recommended. $195.*

Cirrus 21D, 40FD, 40T
Kamerman Labs, 7861 S.W. Cirrus Dr., Beaverton, OR 97005, 503/626-6877, 800/522-2237 (orders only). Requires 128K ROM and SCSI interface. Prices to be announced.

DAFile
Public domain program by Den Winograd. 128K minimum memory. Available through Delphi (ICONtact), CompuServe (MAUG). Shareware.

DataFrame 20, 40, 20XP, 40XP
SuperMac Technology, 950 N. Rengstorff Ave., Mountain View, CA 94043, 415/964-8884. Requires 128K ROM and SCSI interface; HFS only. 20 $1099, 40 $1799, 20XP $1299, 40XP $1999.

DeskZap
Version 1.2. Public domain program by Bruce Tomlin. 512K minimum memory. Available through GEnie and Delphi. Shareware.

The Direct Drive
Jasmine Computer Systems, 555 De Haro St., San Francisco, CA 94107, 415/621-4339. Requires SCSI interface. 20MB $599, 80MB $1380.

DiskInfo
Version 1.43. Public domain program by David Dunham of Maitreya Design. Shareware: $10.

Disk Tools: Battery Pak
One of nine desk accessories in Battery Pak. Version 1.23. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 128K minimum memory. $49.95.

Easy Drive 20, 30, 40
DCC Systems, 1525-B W. Orange Grove Ave., Orange, CA 92668, 714/771-7851. Requires 128K ROM and SCSI interface. 20 $895, 30 $1295 40 $1695.

Easy3D
Version 1.01. Enabling Technologies, 600 S. Dearborn #1306, Chicago, IL 60605, 312/427-0408. 512K minimum memory. $149.

Ehman 20HD, 40HD
Ehman Engineering, Inc., 115 Apache Dr., Evanston, WY 82930, 307/789-3830, 800/257-1666. Requires 128K ROM and SCSI interface. 20HD $1295, 40HD $1695.

Extras
Version 1.5. Public domain program by Bob Luce. 128K minimum memory. Shareware: $10.

FileFinder
Version 2.0. Nashoba Systems, Inc., 175 Sudbury Rd., Concord, MA 01742, 617/371-2028, 800/842-4250. 128K minimum memory. $24.95.

FileMaker Plus
Version 2.0. Forethought, 250 Sobrante Way, Sunnyvale, CA 94086, 408/737-7070, 800/MAC-WARE. 512K minimum memory; requires 800K of disk space, two 800K drives recommended. $295.*

FKey Installer
Version 1.1. Available on Quick & Dirty Utilities Volume 2. Dreams of the Phoenix, Inc., P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. 128K minimum memory. $39.95.

Forecasting and Time Series
Version 4.0. Lionheart Press, Inc., P.O. Box 379, Alburg, VT 05440, 514/933-4918. 128K minimum memory; 800K drive, modem recommended. $145, with Sales and Market Forecasting $200.

(continues)

We're the Leaders in Software Duplication

Just ask the Fortune 500 companies who recently toured Echo Data and picked us over ALL the competition.

They met with management, checked facilities, and asked tough questions about quality control. Our ability to handle "rush" jobs got careful attention.

THEY CHOSE ECHO DATA! Who did YOU just call?

CALL: 800-533-4188 or 215-363-2400

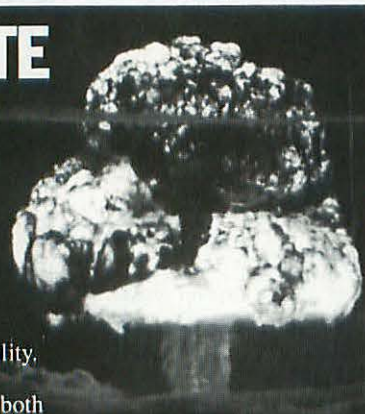
CALL FOR OUR LATEST BULK DISK PRICES...

Maxell–Nashua–Sony–Dysan
and
**** NEW!! C.ITOH Rainbow disks ****

ECHO DATA SERVICES, INC.
Marsh Creek Corp Center
Lionville, Pennsylvania 19353

Circle 193 on reader service card

THE ULTIMATE ERROR MESSAGE



Concern about the potential for accidental nuclear war through computer error is only part of the program of Computer Professionals for Social Responsibility. We're an organization of computer specialists committed to informing both policy-makers and the public about the appropriate uses and potential misuses of computer technology, in all settings.

We invite you to find out more about the work of our organization and our chapters around the country. To learn more, call our national office at (415) 322-3778.

COMPUTER PROFESSIONALS FOR SOCIAL RESPONSIBILITY
P.O. Box 717, Palo Alto, CA 94301

Where to Buy

FullPaint
Version 1.0E. Ann Arbor Softworks, Inc., 5249 Lankershim Blvd., North Hollywood, CA 91601, 818/769-8615. 512K minimum memory. $99.95.

Generic Drive 20
Trimar USA, Inc., 236 W. 15th St., New York, NY 10011, 212/872-4454, 800/872-4454. Requires 128K ROM and SCSI interface. $850.

GraphicWorks
Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667, 800/443-7982, 800/654-3767. 512K minimum memory. $79.95.

Hard 20 Plus
Relax Technology, Inc., 3101 Whipple Rd. #22, Union City, CA 94587, 415/471-6112, 800/848-1313. Requires 128K ROM and SCSI interface; HFS only. $1195.

Hard Disk 20SC
Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Requires 128K ROM and SCSI interface. $1299.

HardMAC+20, +40
CMC Computer Systems, 1514 E. Edinger, Ste. H, Santa Ana, CA 92705, 714/835-2462. Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. +20 $595, +40 $995.

HD-20, 30, 40, 60; HDT 30/40, 60/40
MDIdeas, 1111 Triton Dr. #205, Foster City, CA 94404, 415/573-0580. Requires 128K ROM and SCSI interface. HD-20 $1095, HD-30 $1595, HD-40 $1995, HD-60 $2995, HDT 30/40 $2995, HDT 60/40 $3995.

HyperDrive FX/20
General Computer Corp., 215 First St., Cambridge, MA 02142, 617/492-5500. 1MB minimum memory; HFS only. $1199.

The Investor
Version 1.14. P3, Inc., 309 North Bluff, Wichita, KS 67208, 316/686-2000. 512K minimum memory; requires 800K drive; modem recommended. $150.

Isgur Portfolio System
Version 1.0. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 512K minimum memory; requires 800K drive. $199.95.

LetraPage
Prerelease version 1.0. Letraset, 40 Eisenhower Dr., Paramus, NJ 07653, 201/440-8620. Key-disk copy protection. 512K minimum memory; hard disk recommended. $495.

LoDown SCSI drives
LoDown, 10 Victor Square #200, Scotts Valley, CA 95066, 408/438-7400. Requires 128K ROM and SCSI interface. 20 $995, 30 $1295, 40 $1995, 60 $2495, 80 $3995; Combo 20/20 $1795, 20/50 $2195, 30/20 $2095, 30/50 $2495; T-20 $895, T-50 $1295.

Mac3D
Version 2.0. Challenger Software Corp., 18350 Kedzie Ave., Homewood, IL 60430, 312/957-3475, 800/858-9565. 512K minimum memory; requires two drives. $249.

MacBack+20, +60
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. +20 $995, +60 $1695.

MacBillboard
Version 4.01. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 512K minimum memory. $35.*

MacBottom SCSI
Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33614, 813/884-3092, 800/622-2888. Requires 128K ROM and SCSI interface; Mac Plus recommended; MFS compatible only with additional software. $1195.

MacEqn
Version 1.9. Software for Recognition Technologies, 110 University Park, Rochester, NY 14620, 716/461-0923. 128K minimum memory; 512K recommended. $44.95.*

(continues)

ProLink™ - Copies text files to and from Apple // 3.5" ProDOS disks

Want to use your AppleWorks and other Apple // files on your Macintosh or Macintosh files on your Apple // ? With ProLink you simply insert a 3.5" ProDOS disk directly into a Macintosh 800K disk drive and select the files you want copied to or from any directory on the ProDOS disk.

- Use data from AppleWorks, PFS, MacWrite, Word, Excel, Microsoft Works and others on either your Apple // or Macintosh.
- Supports any Macintosh floppy or hard disk in either MFS or HFS formats.
- Supports 3.5" ProDOS 8 and ProDOS 16 disks from the Apple //e, //c, and //GS.
- No need for complicated transfers using communications programs, protocols, cables, etc.

Requires a Macintosh 512, 512E, or Plus with internal or external Apple 800K disk drive.

$39.95

plus $3 s/h add $2 for COD. Texas add 6 1/4 %.
Sorry, no P.O.s can be accepted for ProLink

DiskExpress™ - Keeps your disk drives at maximum performance

The more you use your floppy or hard disk the slower it becomes. Why? Because as you use a disk, the files on it become more and more fragmented. All disks are divided into a number of areas called blocks with each block holding as little as 1/2K of data. The Macintosh stores files by breaking them into block-size pieces and writing them into unused blocks wherever they are available. Over time, virtually every file can be scattered around in different places. Starting applications, opening documents, sorting databases, and compiling programs all become slower and slower because your drive has to move its head from block to block as it retrieves the pieces of your files.

DiskExpress puts maximum performance back into your disk. It gathers all the pieces of files and puts them into contiguous blocks. Then your drive head need only move to the beginning of a file where it can continue to read sequentially. All the unused blocks are also placed together so that MacServe users will no longer suffer from the "disk too fragmented" message when attempting to create new volumes. It supports floppy and hard disks with either MFS and HFS formats running on Macintosh 512, 512E, Plus, and XL.

Bonus Features: Finds media and directory errors, recovers missing blocks, compacts the desktop file, and secures deleted data.

ALSoft, Inc.
Circle 557 on reader service card

(713) 353-4090
P.O. Box 927, Spring, Tx 77383-0927

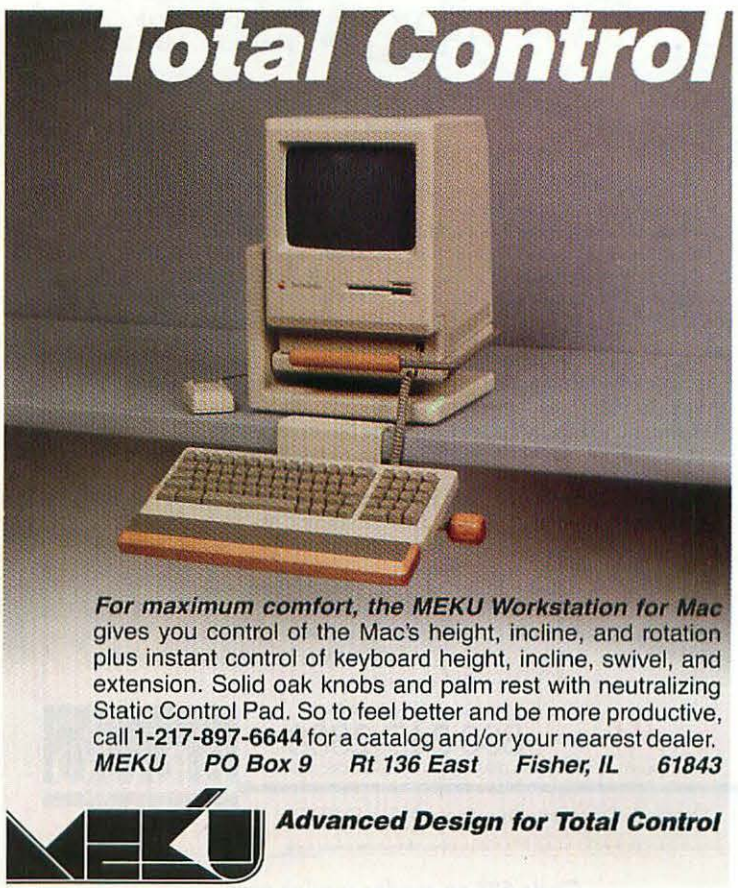
MasterCard VISA

$39.95

plus $3 s/h add $2 for COD. Texas add 6 1/4 %.
Sorry, no P.O.s can be accepted for DiskExpress



Circle 450 on reader service card



Circle 563 on reader service card

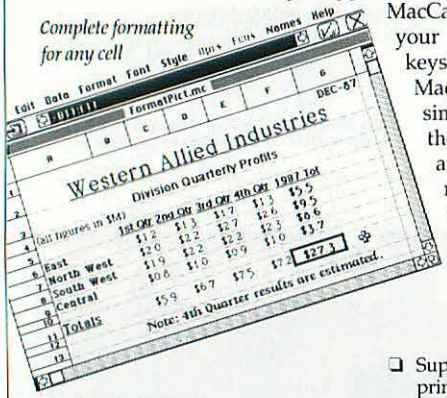
“MacCalc is the clear value leader in the Macintosh spreadsheet market.”
— *Infoworld*

MacCalc

Speed, Style, Simplicity

To be fast is not enough — the speed must be easy to use. We set out to make MacCalc fastest in this fullest sense ... and succeeded. MacCalc is blindingly fast — and that speed is available to the novice as well as the power user. And not only is MacCalc easy, we also included the most important "wish list" features, like cell notes, database search/sort commands, complete formatting with variable fonts/styles/sizes for any cell, variable row height and variable column width, and more. With full desk accessory support and Switcher-compatibility, MacCalc provides access to your favorite graph and keystroke macro programs. MacCalc is focused — simply the easiest and the fastest spreadsheet available...and if that's not enough, MacCalc is also the lowest cost! Ease, speed, style and simplicity. MacCalc.

Complete formatting for any cell



- On-Line Help
- Full Undo for all operations
- Notes for any cell: create an audit trail or remember key assumptions
- Not copy-protected
- Reads/writes Lotus 1-2-3 files and SYLK data
- Supports Desktop Publishing: print publication-quality output or paste formatted tables directly into your page layout program
- Full choice of Format, Font, Style, & Size for any cell
- Variable row height & column width

“...[MacCalc] actually runs faster than Excel; and it clearly surpasses Multiplan in both speed and features... MacCalc is the clear value leader in the Macintosh spreadsheet market... it is difficult to rate [MacCalc] anything but excellent.”
— *Infoworld* software review, 3 November 1986

“MacCalc's one of the best programs I've ever bought... It has an excellent manual... [Bravo] did a terrific job.”
— a Financial Analyst in New York

“MacCalc is a well-designed and powerful product for those who require a full-featured spreadsheet... It is easy to learn, fast and efficient, and is a very good buy...”
— *MacWorld*, December 1986

$139
(CA add sales tax)

Call to order, 8AM to 5PM P.S.T.
800 345-2888
c/o DPAS P.O. Box T Gilroy, CA 95021-2249

BRAVO
Bravo Technologies, Inc.

Dealer & Corporate Inquiries: (415) 841-8552

Trademarks: MacCalc/Bravo;1-2-3/Lotus, SYLK,Multiplan,Excel/Microsoft,Macintosh/Apple

Circle 588 on reader service card

Where to Buy

MacFast 20, 30, 80; MacBack 20, 60
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. MacFast 20 $1395, 30 $1695, 80 $2995; MacBack 20 $995, 60 $1495.

MacMate 20
Relax Technology, Inc., 3101 Whipple Rd. #22, Union City, CA 94587, 415/471-6112, 800/848-1313. Requires 128K ROM and SCSI interface; HFS only. $995.

MacPaint
Version 1.5. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA, 95014, 408/996-1010. 128K minimum memory. $125.

MacSpace
Version 1.0. Abvent, 9903 Santa Monica Blvd. #268, Beverly Hills, CA 90212, 213/659-5157. 512K minimum memory; Mac Plus and plotter recommended. $385.

MacStore 10 Removable
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. $1995.

MacTex
Version 1.1. FTL, 234 Eglinton Ave. E #205, Toronto, Ontario, Canada M4P 1K5, 416/487-2142. 1MB minimum memory; requires external drive; hard disk and LaserWriter recommended. $750.

Magic 20, 30, 65, 234
Rabbit Industries, 3845 Spicewood Springs Rd. #304, Austin, TX 78759, 512/343-0781, 800/622-3475. Requires 128K ROM and SCSI interface. Magic 20 $699, 30 $899, 65 $1399, 234 $3399.

MagNet SCSI Drives, Magnum Tape 20
Mirror Technologies, 2209 Phelps Rd., Box 304, Hugo, MN 55038, 612/426-3276, 800/328-6795 ext. 428 (orders only). Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. 20X $1095, 30X $1195, 40/40 $3195, 85X $5295, 172X $6495; Magnum Tape 20 $1195, 20X with *MacServe* (MFS compatible) $1195, 30X with *MacServe* $1295.

Market Pro
Version 1.0. Pro Plus Software, 2830 E. Brown Rd. #C-12, Mesa, AZ 85203, 602/830-8835, 800/992-2919. 512K minimum memory; requires modem; Mac Plus recommended. $395.

MegaScreen
Version 2.2. MicroGraphic Images, 20954 Osborne St., Canoga Park, CA 91304, 818/407-0571. 1MB minimum memory. $2995.

Mighty Finder
Version 1.1. Public domain program by Eagle I. Berns.

MiniDOS
Public domain.

Omnis 3 Plus
Version 3.23. Blyth Software, Inc., 2929 Campus Dr. #425, San Mateo, CA 94403, 415/571-0222. 512K minimum memory; hard disk recommended. $495, multiuser version (2 to 63 users) $990-$2995.

Other ...
Version 1.5. Public domain program by Loftus Becker. Version 3.0 now available. 128K minimum memory. Shareware: $10.

PageMaker
Version 2.0. Aldus Corp., 411 First Ave. S #200, Seattle, WA 98104, 206/622-5500. Key-disk copy protection. 512K minimum memory; requires two drives and a PostScript printer. $495.

Parameter Manager
Version 1.092. Structural Measurement Systems, Inc., 645 River Oak Pkwy., San Jose, CA 95134, 408/263-2200, 800/654-5157 (orders only), 800/247-4994 (orders only). Requires 128K ROM and SCSI interface; requires two drives; 800K external drive recommended. Version 1.10 now available. $495, PM-Plus version 1.0 $995. PM-Plus options: remote data entry $695, PDC Interface $995-$1295.*

(continues)

First Annual
Andrew Fluegelman Award — 1987

Purpose
The Andrew Fluegelman Award is given annually to encourage personal computer software excellence and to recognize a software programmer or team of programmers. We are looking for people who have made a substantial, innovative contribution to the personal computer community in commercial, shareware or public domain software.

The award was established in 1986 by PCW Communications, Inc., to commemorate Fluegelman's contributions to the software field. Fluegelman developed *PC-Talk*, the first easy-to-use and powerful communications program for the IBM PC. His concept of freeware remains one of the most innovative means of sharing and marketing software. Fluegelman died in July 1985, and a fund was established in his name. The annual award is made possible through this fund.

Eligibility
Any commercial, shareware, or public-domain personal computer software developed by an individual or a team—including utilities, applications, and languages—is eligible. The program must have been released between January 1, 1983, and December 31, 1986. Nominations can be submitted by anyone who did not participate in the software's development. Companies are encouraged to submit nominations for software that they market; but only individuals, not companies, are to be nominated.

Prize
The award winner will receive $5000 and a commemorative plaque. The first award will be presented at a ceremony in California in March 1987.

Judging
Each program will be evaluated according to the following criteria:

- It advances the state of the art of personal computing
- It manifests innovation in concept and design
- It demonstrates orientation to personal computer users

Selection of Winner
The award recipient is selected in a two-step procedure. First, an independent screening committee will review nominations and select the ten finalists.

Second, a panel of judges will evaluate the work of the ten finalists. From these ten, one award recipient will be selected.

This year's 1987 judges are Daniel Bricklin, president of Software Garden; Harry Miller, editor of *PC World*; Jerry Schneider, president of Capital PC User Group; Bob Wallace, president of Quicksoft; and Camilo Wilson, chief executive officer of Lifetree Software.

Deadline
Nomination entries must be postmarked no later than February 1, 1987.
Mail to: Andrew Fluegelman Award
PCW Communications, Inc.
501 Second St.
San Francisco, CA 94107
For further information, please call Shirley Gines at (415) 546-7722.

Program Copies
Finalists will be asked to submit five copies of their program for the judges' evaluation. These will be returned after judging. Please do not send programs until you are notified that you are a finalist.

1987 Andrew Fluegelman Award Nomination Form

Please type your entries; no handwritten entries will be accepted.
If you need more room, attach additional pages to this form.

Name of program: _____
Creator (if more than one, designate team leader): _____
_____
Software marketer: _____
Brief description of program (100 words or less): _____
_____
_____
Reason for your nomination (100 words or less): _____
_____
_____
Software program release date: _____
Nomination submitted by: _____
Company: _____ Phone number: _____
Address: _____
_____

Please send five completed copies of this nomination form to:

ANDREW FLUEGELMAN AWARD
Attention: Shirley Gines
PCW Communications, Inc.
501 Second Street
San Francisco, CA
94107

THE PRINT-LINK™

Gives your Macintosh™ printer choice

A true printer driver software package (disk with optional cable) that allows a variety of popular ink jet, dot matrix and daisywheel printers to be used with all Macintosh™ computers. Prints directly from Macintosh applications. Drivers may be installed on the HD 20 hard disk. No need to learn any new printing procedures.

DAISYWHEEL
Supports all normal features including two-color ribbon. The Print-Link™ is smart enough to recognize which font and point size you have selected, and will automatically space in accordance with your screen selection. Where it appears on your screen is where it will appear on your page, both horizontally and vertically.

DOT MATRIX
All normal dot matrix capabilities are fully supported. This includes the special feature of near letter quality. Coming very soon — 24 Pin and laser support.

EASY INSTALLATION
As easy as a drag and click routine using the user-friendly Macintosh™ window and menu system. "Choose printer" or "Chooser" for final installation.



$62.00 (driver only)
Mac 512 or Mac Plus high quality cable is available.

For inquiries: (604) 291-9121
To order, call: 800-663-6222
Dealer inquiries are welcome.

GDT SOFTWORKS INC.

Suite D, 2800 Douglas Road, Burnaby B.C. V5C 5B7, Canada
Macintosh™ is a trademark licensed to Apple Computer, Inc.
The Print-Link™ is a trademark of GDT Softworks Inc.

Circle 603 on reader service card

FREE $20 MEMBERSHIP

SOFTWARE LIBRARY

Try It First.
RENTAL APPLIES TO PURCHASE

Sony Disks.....SS-$1.30/DS-$2.00
Ribbons.....Blk-$2.75/Col-$3.75
Mac Turbo Touch.....$86.16
MacOpener™ (The complete tool to open the Mac) $14.36

Our list of satisfied clients include:
ABC News N.A.S.A.
Florida Power & Light

Orders Only
1-800-847-5775
Customer Service & Texas Residents
(713) 529-1100
P.O. Box 66754 • Houston, TX 77266

VISA CHECKS WELCOME MasterCard

RENT

AMS Gen. Ledger	29.25
BPI Entry Series	47.82
Inventory Control	19.57
Rags To Riches General Ledger	28.49
Strictly Business General Ledger	59.25
TurboDownloader	8.99
Silver Palate	8.99
Business Filevision	47.60
DoubleHelix	74.25
OverVUE 2.0	35.75
PictureBase	10.49
HD Back-up	8.99
MyDiskLabeler	8.99
Mac3D	26.91
PowerMath	13.79
Ancient Art of War	8.99
Orbitor	8.99
DrawArt	8.99
VideoWorks	12.50
More	38.94
ThinkTank 512	26.32
Top Desk	8.99
Silicon Press	10.52
Work & Print	8.99
MacSpell+	13.36
StatView	26.21
MaxRam MaxPrint	8.99
M.U.D.	8.99
Quick & Dirty Utilities	8.99
TurboCharger 2.0	9.12

COMPLETE WITH MANUALS

BRING UP THE CUP!

Where to Buy

PhD
Amcodyne, 1301 S. Sunset, Longmont, CO 80501, 303/772-2601. Requires 128K ROM and SCSI interface; HFS only; not LaserWriter compatible. $6995.

Phoenix 3D Level One
Version 1.0. Dreams of the Phoenix, Inc., P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. 512K minimum memory; two drives recommended. Version 1.1 now available. $39.95.*

PL 20, 30, 50, 80, 172
Peripheral Land, 3677 Enochs St., Santa Clara, CA 95051, 408/733-7600. Requires 128K ROM and SCSI interface. 20 $995, 30 $1295, 50 $1995, 80 $2495, 172 $5995.

Plus-20, 30, 45, 65, 20T
Peak Systems, 1120 Capital of Texas Hwy., Austin, TX 78746, 512/329-1020, 800/225-7509. Requires 128K ROM and SCSI interface; HFS only. 20 $1095, 30 $1395, 45 $1895, 65 $2495, 20T $895.

ProApp 10, 20, 40S
ProApp, Inc., 10005 Muirlands, Ste. O, Irvine, CA 92718, 714/855-9088, 800/424-2425. Requires 128K ROM and SCSI interface. 10 $795, 20 $995, 40S $1995.

Professional Bibliographic System
Version 2.6. Personal Bibliographic Software, P.O. Box 4250, Ann Arbor, MI 48106, 313/996-1580. Key-disk copy protection; installs on hard disk. 128K minimum memory; two drives recommended. $295.*

Profit Stalker II
Version 1.2. Button.down Software, P.O. Box 19493, San Diego, CA 92119, 619/463-7474. 512K minimum memory; 800K external drive and modem recommended. $250.

Radius Full Page Display
Radius, Inc., 1050 E. Duane, Ste. F, Sunnyvale, CA 94086, 408/732-1010. Requires 128K ROM and SCSI interface. $1995.

ReadySetGo
Version 3.0. Manhattan Graphics, 401 Columbus Ave., Valhalla, NY 10595, 914/769-2800, 800/634-3463. 512K minimum memory. $295.

Run'r
Version 1.0. Public domain program by Tony Jacobs. 128K minimum memory. Shareware.

S-20+
Peachtree Technology, Inc., 3120 Crossing Park, Norcross, GA 30071, 404/662-5158. Requires 128K ROM and SCSI interface; HFS only. $1399.

Sales and Market Forecasting
Version 4.0. Lionheart Press, Inc., P.O. Box 379, Alburg, VT 05440, 514/933-4918. 128K minimum memory; 800K drive and modem recommended. $145, with Forecasting and Time Series $200.

SD-11, 22, 30, 60, 105, 140, 170
Softworks, Limited, 2944 N. Broadway, Chicago, IL 60657, 312/975-4030. Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. 11 $599, 22 $850, 30 $999, 60 $1495, 105 $2995, 140 $3495, 170 $3995.

Shanghai
Prerelease version reviewed. Activision, Inc., 2350 Bayshore Pkwy., Mountain View, CA 94043, 415/960-0410. Not copyable. 128K minimum memory. Version 1.0 now available. $44.95.*

Sierra 20/40, 30/40
Peak Systems, 1120 Capital of Texas Hwy., Austin, TX 78746, 512/329-1020, 800/225-7509. Requires 128K ROM and SCSI interface; HFS only. 20/40 $2495, 30/40 $2695.

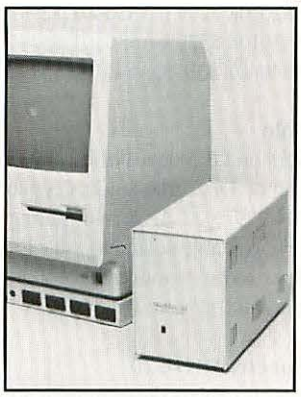
SkipFinder
Version 6.1. Public domain program by Darin Adler.

SlimLine SCSI Drives
Univation, 1231 California Circle, Milpitas, CA 95035, 408/263-1200, 800/221-5842. Requires 128K ROM and SCSI interface; HFS only. AS10R

(continues)

One for the money. Two for the show.

MacMate 20™: Portable, quiet, and very affordable.



This convection-cooled, vertical Seagate 225N, 20 megabyte SCSI drive is built to take up to 40 G's so it goes where you go! Designed to daisy-chain to each other - or to the Relax Hard 20 Plus - in a configuration of up to seven external disk drives. For the ultimate in silence and convenience,the MacMate 20 can be controlled from the Relax 5-outlet Mac Power Controller, and can be placed out of site, up to 10-feet away.

Hard 20 Plus™: Hard disk drive plus power controller.



Surge protection and 4 up-front, peripheral control switches, coupled with a high integrity drive makes the Hard 20 Plus an unbeatable value! Features the Seagate 225N, 20 megabyte SCSI drive, the first integrated hard drive designed exclusively for the Mac. Also available in 30, 40, 60, 80, and 150 megabyte versions. Fan-cooled.

Complete Utility Package: included with every Relax Drive. **Tape Back-Ups**: TEAC SCSI Tape Back-ups are now shipping from Relax.

Relax Products are available at better computer stores everywhere. Dealer inquiries invited.
800/848-1313, CA: 415/471-6112
Dealer Hot Line: 415/883-4232

RELAX TECHNOLOGY
3101 Whipple Rd.#22
Union City, CA 94587

Circle 614 on reader service card

"This is what I think a database on the Mac should be."

John C. Dvorak, *InfoWorld*, May 26, 1986

Very easy to use

"I mastered the program in one sitting."
User Ted Roeser, Dickinson, TX

"Record Holder is easy to use . . . The manual and tutorial are top notch."
MACazine, May, 1986

Powerful, too

". . . It's a powerful data manager."
MacUser, April, 1986

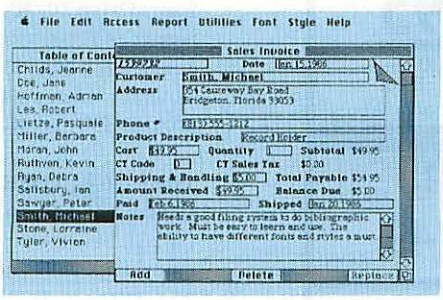
"This program out-classes most other programs selling for three or four times as much."
The Desktop Journal, a publication of the Yale Macintosh user group, Winter, 1986

"Record Holder met all our performance expectations . . ."
InfoWorld, March 24, 1986

A super value

"One of my most liked and most used programs, regardless of price."
User Steve Harding, El Paso, TX

"Absolutely the best value of any software we have yet purchased."
User W.B. Olliphant, Tacoma, WA



A typical Record Holder screen, showing the easy-to-format Display window and the Unique Table of Contents window, which allows instant access to all records in your file.

RECORD HOLDER
Data Manager for the Macintosh

The first high-quality low-priced data manager for the Mac.

$69.95

30 day Money Back Guarantee
if not 100% satisfied

To order, call toll-free anytime
1-800-437-5200, Op.29

Visa and and Mastercard accepted.
Add $5 for shipping & handling.
CT residents add $3.75 sales tax.

To order by mail, send check or money order to:
Software Discoveries, Inc.
99 Crestwood Road, Tolland, CT 06084 (203) 872-1024

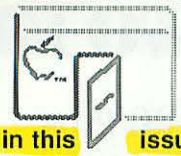
Circle 435 on reader service card

We RENT Mac Software !!

MacStore TM
28 Tealwood
New Braunfels
Texas 78130

National **1-800-847-0026**

Ask about our frequent renter program !



We'll match any software rental price in this issue.

We have hundreds of other titles available for the Mac. If you don't see what you want - call us !

Accessory Pak 1	8.80	Mac Golf	9.45
Accounting Packages	Call	Mac Labeler	8.80
Art Grabber	8.80	Mac Lightning	14.80
Battery Pak	8.80	Mac Muscle	8.80
Bulk Mailer	21.60	Mac Project	26.29
Business Filevision	56.25	Mac Publisher & Mac Publisher II	Call
Click Art, Effects, Letters, Publications (each)	8.80	Mac Spell Right or Mac Spell +	13.85
Click-on Worksheet	13.33	Mac Terminal	13.20
Consultant	28.80	Mac 3 D	27.80
Copy II Mac	8.80	Mac Tracks	8.80
Championship Boxing or Baseball	8.80	Mac the Knife 1, 2, or 3 (Art, Fonts, Ripper)	Call
Cricket Graph	29.90	Management Edge, Sales Edge	Call
Davinci (We have them all!)	Call	MegaFiler, MegaForm, MegaMerge	Call
Dollars and Sense	18.70	Mind Prober	8.80
Excel	52.75	Musicworks or Videoworks	13.19 & 14.15
Factfinder	22.95	My Office & Executive Office	Call
Filemaker	29.20	Omnis III Plus	70.95
Fluent Fonts, Fontastic, Font Explorer, Laser Fonts, Superfonts, UltraFonts...	Call	OverVue	36.80
Flight Simulator (Microsoft)	8.80	Picture Base or Postermaker	8.80
Full Paint	14.56	Pinball Construction Set	8.80
Gato, Orbitor, or Gridwars	8.80	Professional Composer	76.45
Helix	49.50	Quick Disk, Quick Word, Quick Paint (each)	8.80
Infocom games	Call	Ready Set Go	Call
Jazz	49.45	Smooth Talker	15.36
Keystroke	64.68	Tempo	13.30
Languages (Asm, Basic, Z Basic, C, Cobol, Experlisp, Fortran, TML Pascal, etc.)	Call	Think Tank 128 & 512	Call
Microsoft Chart, File, Multiplan, Word	Call	TurboCharger or Word Handler	Call
Mac Attack	8.80	Will Writer	8.80
Mc Cad	62.56	Word Handler or Word Play	Call
Mac Challenger or Mac Command	8.80	**Accessories**	
Mac Draft	29.95	Sony Disks (10 - boxed)	12.95
Mac Draw	32.47	800k External Drives (double sided)	219.00
		Upgrades & Power Supply Board Repairs	Call
		SCSI Hard Disks	Call

No membership fee • 16 day rentals • Rental applies to purchase

The store logo is a trademark of MacStore, Inc., the apple logo a trademark of Apple Comp. Inc.

MasterCard VISA AMERICAN EXPRESS

In Texas **1-800-222-1537** After tone ask operator for extension **993265**

or dial direct **512-629-5419**

Circle 16 on reader service card

SONY®

QUANTITY DISCOUNTS

3½" single	3½" double
12.95 10 PER BOX	**18.95** 10 PER BOX

BULK MIN. 50

3½" SINGLE SIDE **1.15** EACH

3½" DOUBLE SIDE **1.49** EACH

the Diskette Connection™

VISA MasterCard

* **Delaware 1·800·451·1849** P.O. Box 10247 Wilmington, DE. 19850
* **Oklahoma 1·800 654·4058** P.O. Box 1674 Bethany, OK. 73008
* **Nevada 1·800·621·6221** P.O. Box 1213 Boulder City, NV. 89005

TERMS: Minimum 30.00 total — VISA or MasterCard accepted
C.O.D. orders add 2.00 for special handling. SHIPPING: 3½" & 5¼" Diskettes: Add 3.00 for every 100 Diskettes or any fraction thereof. 8" Diskettes: Add 4.00 for every 100 Diskettes or any fraction thereof. We ship UPS; orders requiring other delivery methods add shipping, plus 2% of total order.

Circle 562 on reader service card

Where to Buy

$2195, AS1010-2R $3495, AS20F $1695, AS30F $1895, AS40F $2695, AS2010R $2995, AS2040T $2995, AS3010R $3295, AS3040T $3295, AS4040T $3995, AS4010R $3995.

Solo

Version 1.0. Mac America, 18032-C Lemon Dr., Yorba Linda, CA 92686, 714/779-2922. 512K minimum memory. Available at January Mac Expo. Price to be announced (probably under $400).

Spectra Drive 20

Spectra Micro Development, P.O. Box 41795, Tucson, AZ 85717, 602/884-5178. Requires 128K ROM and SCSI interface; Mac Plus recommended; HFS only. $795.

Strategic Conquest II

Version 2.0. PBI Software, Inc., 1111 Triton Dr. #201, Foster City, CA 94404, 415/349-8765, 800/843-5722, 800/572-2746 in California. Not copyable. 128K minimum memory. Also available: Strategic Conquest +, 512K minimum memory. $59.99 each.*

SunStreak SCSI Drives

Sunol Systems, Inc., 1177 Quarry Ln., Pleasanton, CA 94566, 415/484-3322. Requires 128K ROM and SCSI interface. 21 $1295, 30 $1695, 45 $2795, 70 $3795, 110 $5295, 180 $7995.

SuperPaint

Version 1.0. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126, 619/695-6956. 512K minimum memory. $99.

SupraDrive 20, 30, 60

Supra Corp., 1133 Commercial Way, Albany, OR 97321, 503/967-9075. 1MB minimum memory; HFS only. 20 $799, 30 $995, 60 $1995.

TDBK-20+, TDBK-45

MDIdeas, 1111 Triton Dr. #205, Foster City, CA 94404, 415/573-0580. Requires 128K ROM and SCSI interface. 20+ $1095, 45 $1295.

Textures

Version .80. Addison-Wesley Publishing Company, EMSD, Jacob Way, Reading, MA 08167, 617/944-6795, 800/255-2550. 512K minimum memory; requires two drives; Mac Plus and hard disk recommended. $495.*

TimeLink

Version 1.0. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 128K minimum memory. Version 2.0 now available; return disk and $10 for update. $49.95.*

Tiny Finder

Public domain.

TOPS

Version September 11. Centram Systems West, Inc., 2560 Ninth St. #220, Berkeley, CA 94710, 415/549-5900. 512K minimum memory; requires AppleTalk network and at least one hard disk. $149 per Mac, $389 per IBM PC (or compatible).

Warp 20, Photon 20, 30, Transporter 20, Photon 2001

Warp Nine Engineering, Inc., 1751 W. Country Rd. B #107, St. Paul, MN 55113, 612/426-9769, 800/654-5294 or 800/328-6795 ext. 433. Requires 128K ROM and SCSI interface. Warp 20 (internal) for 512K $795, for Mac Plus $849; Photon 20 (external) for 512K with SCSI port $845, for Mac Plus $695; Photon 30 for 512K $945, for Mac Plus $795; Photon 2001 for 512K $1645, for Mac Plus $1495.

Waystation

Version 2.6. Public domain program by Steve Brecker.

WhisperDrive

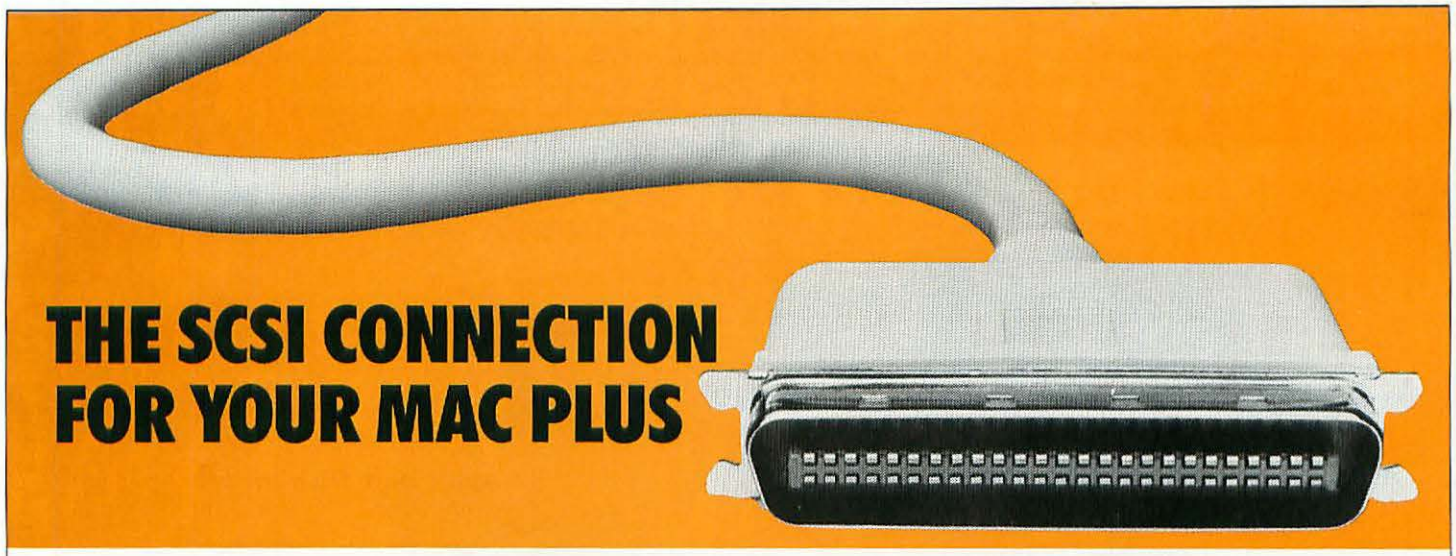
Palo Alto MicroSystems, 369 Christopher Ct., Palo Alto, CA 94306, 415/424-8740. Requires 128K ROM and SCSI interface; Mac Plus recommended; MFS compatible only with appropriate software. $889 internal, $789 external.

WriteNow

Version 1.0. T/Maker Co., 1973 Landings Dr., Mountain View, CA 94043, 415/962-0195. 128K minimum memory. $175.*

zFinder

Public domain program by Joel McNamara. □



THE SCSI CONNECTION FOR YOUR MAC PLUS

Now you can connect your SCSI Drive to a Macintosh™ Plus or Apple® IIGS at an affordable price. Our Apple equivalent custom molded cables match the host computer in style and color and include thumbscrews.

- **Mac Plus/IIGS SCSI Drive Cable** *$32.95*
  SCSI Drive Cable for Mac Plus/IIGS
  DB-25 (M) to Centronics 50 pin (M) (18 inches)

- **SCSI Expansion Cable** *$45.05*
  Daisy chain SCSI Drive to other SCSI Devices
  50 pin Centronics (M) to 50 pin Centronics (M) (18 inches)

- **SCSI Extension Cable** *$46.55*
  For remote installation of SCSI Devices or extending existing SCSI Cables
  50 pin Centronics (M) to 50 pin Centronics (F) (1 Meter)
  2 Meter version also available for *$59.50*

Similar cables are also available for the Apple Macintosh, IIGS, IIe, IIc and IBM®PC. See your local dealer for more information or call:

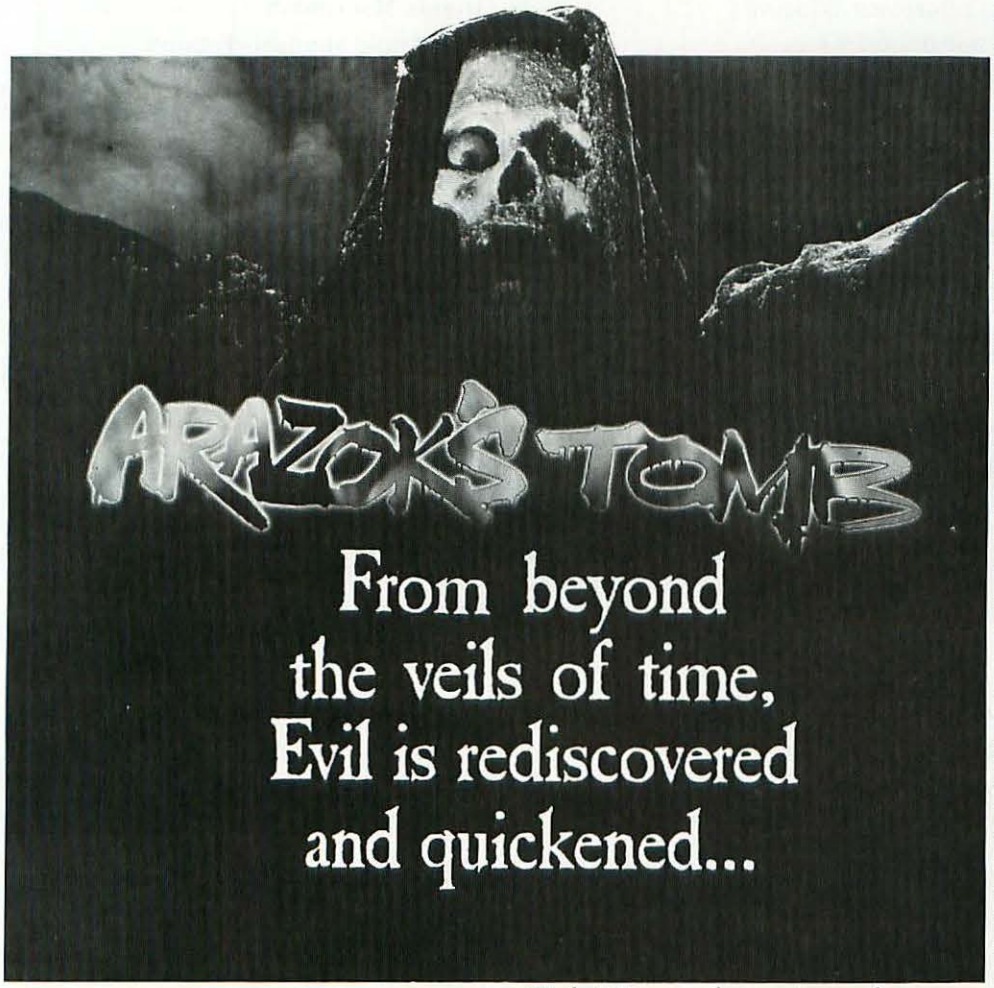
N² PRODUCTS, INC.

15345 Bonanza Road
Victorville, CA 92392-2401
619-243-3632

Sales Office
San Jose
408-434-6488

See us at MacWorld Expo in San Francisco at Booth #1116

Circle 353 on reader service card



A TEXT AND GRAPHICS ADVENTURE FOR THE 512K MACINTOSH COMPUTER. STEP INTO PERIL AT A DEALER NEAR YOU OR ORDER DIRECT!

FOR MORE INFORMATION OR YOUR NEAREST DEALER: (213) 392-9972

NAME _____

ADDRESS _____

CITY _____ **STATE** _____

ZIP _____ **PHONE** _____

☐ **YES! I WANT TO ORDER ARAZOK'S TOMB. SEND ME** _____ **AT $49.95 EACH.**

I'VE ENCLOSED MY
☐ **CHECK** ☐ **MONEY ORDER** ☐ **VISA/MASTERCARD**

NUMBER _____ **EXP** _____

SEND TO:

AEGIS DEVELOPMENT

2210 WILSHIRE BLVD. #277
SANTA MONICA, CA 90403

MACINTOSH IS A TRADEMARK OF APPLE COMPUTER, INC.
ARAZOK'S TOMB © 1986 THE NEXT FRONTIER CORPORATION

Circle 317 on reader service card

Macworld Best-Sellers

Business Software

Months on chart	Last month	This month	
19	1	1	**Microsoft Word** *Microsoft*
11	2	2	**Microsoft Excel** *Microsoft*
7	5	3	**PageMaker** *Aldus*
3*	4	4	**MacWrite** *Apple Computer*
16	5	5	**MacDraw** *Apple Computer*
3*	6	6	**MacPaint** *Apple Computer*
2	7	7	**FullPaint** *Ann Arbor Softworks*
4	8	8	**MacDraft** *Innovative Data Design*
13	9	9	**Jazz** *Lotus Development*
18	10	10	**Microsoft File** *Microsoft*

Education Software

Months on chart	Last month	This month	
3	1	1	**Math Blaster!** *Davidson and Associates*
3	2	2	**Typing Tutor III** *Simon and Schuster Computer Software*
3	3	3	**MasterType** *Scarborough Systems*
3	4	4	**MacEdge II** *Think Educational Software*
3	5	5	**Kids' Time** *Great Wave Software*

Entertainment Software

Months on chart	Last month	This month	
3	1	1	**Flight Simulator** *Microsoft*
3	2	2	**MacGolf** *Practical Computer Applications*
1	–	3	**Lode Runner** *Brøderbund Software*
2	4	4	**Sargon III** *Spinnaker Hayden*
2	5	5	**Gato** *Spectrum HoloByte*

Networking/Data Communications

Months on chart	Last month	This month	
3	1	1	**AppleTalk** *Apple Computer*
3	2	2	**MacServe** *Infosphere*
3	3	3	**Apple Personal Modem** *Apple Computer*
11	4	4	**MacTerminal** *Apple Computer*
3	5	5	**Smartcom II** *Hayes Microcomputer Products*

Hard Disk Drives

Months on chart	Last month	This month	
3	1	1	**Apple Hard Disk 20** *Apple Computer*
1	–	1	**HyperDrive 10** *General Computer*
3	2	3	**HyperDrive 20** *General Computer*
3	3	4	**DataFrame 20** *SuperMac Technology*
3	5	5	**LoDown-20** *LoDown*

Books

Months on chart	Last month	This month	
3	1	1	**Excel in Business** *Douglas Cobb, Microsoft Press*
3	2	2	**Inside Macintosh** *Addison-Wesley*
2	3	3	**The Apple Macintosh Book** *Cary Lu, Microsoft Press*
3	3	4	**The Printed Word** *David A. Kater and Richard L. Kater, Microsoft Press*
3	5	5	**Microsoft Macinations** *Mitchell Waite, Robert Lafore, and Ira Lansing, Microsoft Press*

Product Watch

Editors' choice:
Other recent products of particular interest.

Adobe Illustrator *Adobe Systems* PostScript graphics

Dark Castle *Silicon Beach* game

LabView *National Instruments* engineering

Source: Exclusive InfoCorp survey of more than one hundred Macintosh retailers' and selected mail-order suppliers' sales during September 1986.

**Formerly bundled with the Mac.*

The wait is over. Introducing LaserServe.™

You love your LaserWriter. It prints fantastic looking text and graphics, and it's easy to share using the Appletalk network. Unfortunately, you have to wait for your documents (and everyone else's) to print before you can get on with your work.

Waiting ... while people and hardware are idle.

Now, with LaserServe, you can keep on working while your network's printers are busy printing everyone's documents. There's no waiting for LaserWriters (or AppleTalk Imagewriters) to become available. No waiting for them to print. LaserServe takes care of this "busy work" so you can do more important things.

LaserServe's decentralized design fits your needs—whether you're a single user or a member of a large work group. Its "personal servant" approach requires neither hard disk nor dedicated server. You gain control while LaserServe "waits in line." When you need something printed in a hurry, LaserServe's "priority service" option takes it to the front of the line. "Pop-up" messages even tell you when the printing is complete.

MacServe™ from Infosphere has long been the number one solution for Mac networking. LaserServe is the number one solution for printing. Don't wait any longer. Ask your Apple dealer for MacServe and LaserServe.

LaserServe. AppleTalk printing without the wait.

INFOSPHERE®

4730 SW Macadam Avenue • Portland, Oregon 97201 • (503) 226-3620



sk
our
ealer
bout our
acServe System
ebate Offer!

Circle 249 on reader service card

See us at
MacWorld Ex
Booth #1132

Turbo Mouse™ Twice the speed, in half the space.

Finally, a Mouse that's really quick. One that doesn't require a lot of room on your desk. One that's easy to use, even on a desk full of papers. Turbo Mouse from Kensington.

Turbo Mouse turns mouse technology upside down. It puts the mouse ball on top, rather than on the bottom like a standard mouse. You move only the mouse ball, not the whole mouse. That's why Turbo Mouse is quicker, quieter, and easier to use.

Turbo Mouse doesn't get its speed only from this ease of use. It has an automatic acceleration feature that senses the speed at which you are working and moves the cursor further when you move the mouse ball faster.

Turbo Mouse has two mouse buttons - one for right-handed users and another for lefties. And, since it's only 4" x 6", Turbo Mouse will fit neatly at the end of your keyboard.

Turbo Mouse, is compatible with Macintosh,™ Apple®IIe and Apple IIc. For more information, or a dealer near you, call 800-535-4242. In NY call 212-475-5200.

KENSINGTON™

